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NATURAL LIGHT IN TOILET ROOMS.

In these columns we have several times written of the great value of natural light in toilet rooms, and have made some attempts to show the necessity of municipal legislation which shall make it obligatory to design buildings so that it can be secured. In our issue for November 27, 1909, we pointed out the fact that an attempt was being made in Chicago to pass the proposed new building ordinance in such form that toilet rooms may be constructed without natural light, provided such rooms are mechanically ventilated.

The editorial referred to was read by the alderman who has the proposed ordinance in hand and, in response to a direct request that the section of the ordinance which, as drawn, permits such construction, be modified so that it would be prevented, replied that he thought "that in a city like Chicago it was impossible to construct buildings so that the toilet rooms would have natural light."

This is not true. It is perfectly feasible in Chicago or in any other city, so to design buildings that all toilet rooms in or above the basement shall have natural light. It is not a question of engineering or architectural skill which makes it seem impossible. It is, in Chicago, simply a question of economics. With office floors renting at from $1.50 to $3.00 a square foot per annum, it is not considered good business judgment to use such space for toilet rooms. This is a bald statement of the reasoning which is placed before the Chicago council and which is so convincing that it seems impossible to do the contrary.

We have heretofore quoted sanitary authorities than whom there are none higher, showing conclusively from the standpoint of the medical sanitarian, that it is of very great importance that natural light should be provided in toilet rooms. As the authorities quoted* before do not seem to have been considered conclusive, it is quite possible, nay, even probable, that the following letter from Dr. Woods Hutchinson will have no weight with the councilmen of Chicago. But, thank Heaven, there are other cities where the commercial spirit does not dominate all conditions, and in those cities this counsel may fall on more attentive ears. The writer of this private letter (reprinted here by permission of both its writer and its recipient) is an authority whose work has attracted much attention in this and other countries. He is a medical man, a graduate of Penn College and of the University of Michigan, a post-graduate student in London, Paris, Vienna and Oxford. His opportunities for investigation have been ample. Referring to this identical question, not only as to

* See "Domestic Engineering" for December 1, 1906, for an article by Charles B. Ball, C. E., Chief Sanitary Inspector of the Chicago Health Department.

natural light in toilet rooms, but other rooms as well, Dr. Hutchinson says:

"I fear it may be too late now for my opinion to be of use to you, but I have no hesitation in saying briefly that no room can possibly be kept in reasonable sanitary condition into which daylight does not enter. I will go further and say that I thoroughly believe in the shrewd old Spanish proverb that "where sunlight never enters, the doctor often does." No room can possibly, or ever will, be kept in proper sanitary conditions, which is not well lighted, nor can any room be prevented from becoming a breeding place for bacteria of all sorts into which both fresh air and sunlight do not come, the latter at least during some part of the day.

"I resided for some years in the city of London, and took occasion to study the effect of fogs upon the death rate of the city, for which it is famous, or rather infamous.

"In every instance where fog of considerable density lasted for more than twenty-four hours there was a sharp rise in the death rate, not merely from respiratory diseases, but from all causes, not only in children and aged, but in adults as well. And if the fog lasted three days this rise was very striking. The cause appeared to be, not so much the irritating effect of the fog upon the respiratory passages, as the general lowering vitality and nutrition due to the absolute cutting off of sunlight.

"I should regard it as particularly undesirable and unsanitary for rooms in which food products are to be prepared, like bakeries, to be lighted by any other than natural light. Both bacteria and flies will breed in swarms in the neglected corners of rooms of this sort into which light does not constantly penetrate. And the bread made in such dens would be as injurious to the community as the cellars themselves would be to the bakers who worked in them."

We desire to make a prophecy. In a growing city, under constantly changing conditions, it is impossible to construct a general building ordinance which will remain applicable for many years. The ordinance in Chicago which is now being replaced by an entirely new draft is but a few years old. The ordinance now being drawn will be old and out-of-date in five years. By that time the greedy owners of buildings will have persuaded their architects to bury the toilet rooms in inside caverns unlighted by nature, and will have provided them with mechanical ventilation which from one cause and another (including cost of operation) do not ventilate; the resulting dissatisfaction of tenants will be so acute that a more amenable body of aldermen will be obliged to pass legislation to secure what now seems quite impossible—natural light in all toilet rooms except in sub-basements.

The Union Plumbing Co., Asheville, N. C., has moved its place of business from 7 South Lexington Ave. to 23 North Main St.

HOW ORDERS FOR PLUMBING, HEATING AND OTHER SUPPLIES ARE PLACED IN CHINA.

In answer to an inquiry United States Chargé d'Affaires Henry P. Fletcher, of Peking, furnishes the following information concerning the letting of contracts and the furnishing of supplies to contractors for the Chinese Government, which applies fully to North China and, to a great degree, to building construction throughout the Empire: "The Chinese Government has no rules, printed or otherwise, for letting contracts or buying materials. The man on the spot with the lowest price and quickest delivery gets the work. Ninety per cent of all the building done in China is done by Chinese contractors. When foreign material is specified, such as heating plants, plumbing, electric-light plants, light fixtures, constructional steel, etc., tenders for these materials, either delivered on the ground or put in place, are asked for from the many foreign firms in Tientsin or Shanghai. These firms hold agencies for the materials required and all arrangements are made with them. Neither the native engineer nor the foreign contractor deal directly with the home houses, as it saves much trouble to deal with large houses well established in China. Their prices include freights, duties, and the numberless other small items, and a price is quoted which lands the goods where wanted, and, if desired, puts them in place. The contractor has nothing to do beyond paying the foreign firm in China and making sure that he gets what he ordered. Unless connections are made with a well-established firm or a permanent agency for a special line of goods created, there is no chance of introducing foreign goods into China. As all the large firms have their own expert engineers, the contractor can have fair prices quoted at short notice on anything. All these firms make it their business to be very much in touch with all proposed work, both government and private. The terms usually offered by the government are one-third on arrival of papers of shipment, one-third on delivery, and one-third on acceptance. These government terms varied considerably during the last year; in order to help the foreign firms, as money was tight and exchange bad, the government paid on several occasions one-half on signature of contract and one-half on completion of work."

ST. LOUIS COMFORT STATION OPENED.

The first public comfort station in the downtown district in St. Louis, Mo., that in the basement of the courthouse, was opened for inspection one day last week, and will be transferred to the city in a few days, fully equipped and ready for use. The Board of Public Improvements, members of the Public Recreation Commission, heads of departments at the City Hall and members of the Municipal Assembly visited the station and expressed themselves well pleased with the work. Members of the Executive Board of the Civic League, the Street Committee and other committeemen were present. About 250 persons inspected the place during the afternoon. The payrooms will probably not be open for use for a few weeks, but the free toilets are open to the public now, complete heating system with both hot and cold water has been supplied. An emergency room on the women's side, with a medicine case filled with simple remedies, and a sanitary couch, is one of the features of the station. Bubble drinking fountains are placed at the street entrance at each side. Frequent inquiries were made of the Street Committee in charge asking who the donor is, but not even the members know this, as it is his request that his name be kept secret. City Counselor Walther has prepared the necessary papers making the transfer, and these papers will be signed by N. A. McMillan, president of the St. Louis Union Trust Company, and Mayo Fesler, secretary of the Civic League, who are trustees in charge of the fund. It is believed by members of the league's committee and others that the use of this station will soon convince the city of the necessity of putting in similar ones at other locations.

Charles Bain and L. L. English have formed a partnership and will soon open a plumbing establishment at Willsdale, Mich.

Modern Conveniences for the Farm Home*

By Elmira T. Wilson, C. E.

Formerly Assistant Professor of Civil Engineering, Iowa State College.

(Concluded from Page 91, January 22, 1910.)

HEATING SYSTEMS.

The health and comfort of the home depends to a considerable extent upon the heating system, which, in importance, is second only to that of sanitary plumbing. Stoves are a development of the fireplace of our ancestors. Their waste of fuel, their uncleanliness, and their inability to properly heat even one room are features recognized by most people. The ideal heating system is one that will promptly and continuously supply every room in the house with enough warm fresh air to make it comfortable in the coldest weather. It must be easy to manage and not complicated in construction. The cost of installing a steam or hot-water system is more than that of a hot-air furnace. The amount of fuel used by them is less, but for a small house the hot-air furnace is most often used. It has the advantage, too, if properly installed, of supplying fresh air, while the other systems demand special means for ventilation, or dependence must be placed entirely upon opening the doors and windows.

FURNACES.

A furnace is a stove within a casing of galvanized iron or brick. Air is admitted to the space between the two and when it becomes heated passes through pipes to the different rooms of the house. The furnace may be constructed of cast iron, wrought iron, or steel. The cast-iron furnace has fewer joints than the one made of steel plates and will not vary in temperature so rapidly.

Direct and Indirect Draft.

In construction there are two styles, the "direct" and the "ndirect" draft. The better class of the "direct" draft furnaces have a radiator through which the hot gases pass on their way to the smokestack and so utilize much heat that would otherwise be lost. In the "indirect" draft furnaces the gases pass through radiators at the bottom and from there to the smokestack. A direct passage is furnished to be used when the fire is being started or when coal is being added. Some furnaces are "built to sell" by their size and are not furnished with a radiator. These will burn more fuel and give off less heat.

The Smoke Pipe.

The smoke pipe should connect to the chimney as directly as possible, for elbows diminish the draft. The flue should be at least 8 in. by 12 in. and should have no other opening into it for range or fireplace. A clean-out door should be provided at the bottom, fitted with a tight door, and this door must be kept shut, except when cleaning out the flue.

The Grate.

The grate is one of the most important parts of a furnace, and there are many kinds to be had. The essential things are the removal of ashes and cinders from the entire grate surface without carrying unburned coal with them, and the admission of air to secure proper combustion of the fuel. In comparing furnaces the average diameter of the fire-pot is taken. The space above must be large enough to permit of the thorough mixing of the gases with air or else much heat will be lost by imperfect combustion. If soft coal is to be burned a larger combustion chamber is needed than with hard coal, as the supply of air must be greater.

Furnaces differ in the manner of bringing the air to be warmed into contact with the surfaces heated by the combustion of the fuel. The area of the heating surfaces should be about 60 times the area of the grate surface to prevent overheating of the air in cold weather.

Where natural gas is available the furnace can be arranged to burn it, but it is well to have a coal grate also in case the gas should be shut off. Wood furnaces are generally more simple in construction and are often built to take a 4-ft. stick. Where wood is cheap excellent results may be obtained. The smoke should pass through a radiator, as in case of coal furnaces.

Distribution of Hot Air by Means of Pipes

Much depends upon the location of the furnace. It should be placed somewhat to the north and west of the center of the house—that is, toward the prevailing cold winds. As the hot air travels best through the pipes leading toward the sheltered part of the house and to the upper rooms, the pipes leading toward the north and west or to the rooms on the first floor should be given the preference with respect to length and size. Make all pipes as nearly the same length as possible and as short as the location of the registers will permit. Long horizontal runs of pipe should be avoided, especially in first-floor pipes. The pipes should pitch upward as sharply as possible so the resistance will be less. Each pipe should have a damper near the furnace. Each room should have a separate pipe, if possible, or the heat will go to the less-exposed room when a wind is blowing. Exposed pipes should be provided with an asbestos covering, even when made double; double pipes are the best for all work. Bright tin is always used for hot-air pipes, as it radiates less heat than any other suitable material. The registers should be as near the furnace as possible. Nothing is gained by putting them on the exposed side of the room and much heat is lost. First-floor registers may be placed in the floor if wall registers would interfere with the pipes to the second floor. Second-floor registers should be placed in the wall so as to avoid the necessity of cutting carpets and not to furnish receptacles for dirt. If only the first floor is heated the registers should be placed in the wall. The net area of the register should be about 15 per cent greater than the section of its hot-air pipe.

Size of Pipe to Use

The size of the room and whether it is a bedroom or living room; the run of pipes, whether short or long, straight or crooked, vertical or horizontal, should all be considered in determining the size of the hot-air pipes. Pipes can be too large, but more often they are too small. When in doubt, use the larger size. For first-floor rooms up to 12 ft. square and 10-ft. ceiling, 9-in. pipes should serve; for larger rooms up to 14 ft. by 16 ft. with 10-ft.

*Prepared and published by direction of the Department of Agriculture, Washington, D. C.

ceilings, use 10-in. pipes; and for rooms still larger, 12-in. pipes. Sleeping rooms and bathrooms on the first floor need 8-in. pipes. If any pipe is poorly located a size larger should be used.

The Cold-Air Supply

The cold-air supply pipe should be made of galvanized iron, as it will then be dust and fireproof and more durable than if made of wood, which cracks and admits the dust and the close air of the cellar. If it is made of wood, matched boards should be used and the wood should be stopped at least a foot from the furnace. The size of the cold-air pipe is often made equal to three-fourths the combined area of the hot-air pipes, as air expands when heated. It should never be smaller than this and might be made of the full area of the hot-air pipes. If not enough cold air is supplied, the pipes leading to the sheltered side of the house will take all the air and even draw down air from registers on the windward side. In attempting to warm these unfavorably located rooms in extreme weather the air must be overheated, which is hard on the furnace. In localities where zero weather is frequent, a pipe is often provided to return the air of the house through the furnace. The area of this pipe should be equal to the combined areas of the hot-air pipes. This pipe is not to take the place of the fresh-air inlet, but can be used part of the day without harm. If used at all, it must be used intelligently, or

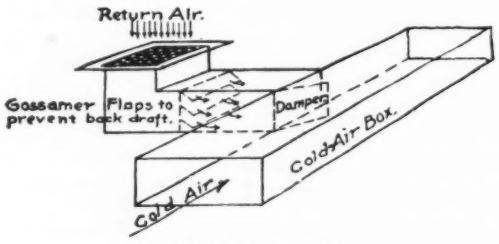


Fig. 20. Return-Air Pipe.

else the saving of fuel is at the expense of health and comfort. When a return-air pipe is used, it often joins the fresh-air inlet pipe, as shown in Fig. 20. If this combination is installed, the pipe is full size from the furnace to where the inside supply pipe is connected and three-fourths size from there to the outside air. Both pipes should be provided with dampers. It is often necessary to shut off part of the cold-air supply to start the fire, but the full supply should be turned on as soon as possible or air will be taken from the cellar or from some of the registers. If it is found that some registers do not deliver enough warm air while others supply too much, the dampers can be adjusted to cut off part of the flow from rooms that have more than their share, which will throw it into the less favored pipes.

Rooms having fireplaces are more easily heated than others. All rooms not having fireplaces should have ventilators with pipes of half the size of the warm-air inlet and pipe, the opening being near the ceiling on the same side of the room as the warm-air inlet, but as far as possible from it. All these pipes should unite in the attic and have a common outlet, preferably surrounding the chimney, as the heat from the smoke flues will induce a draft.

If the furnace is of sufficient size and is properly located and the fittings well put up, it should give no more trouble than a single stove, while the risk from fire is much less. The satisfaction of a warm house, especially of warm floors, can not be counted in dollars and cents.

Regulating the Dampers.

An arrangement for regulating the dampers by hand can be placed in any convenient room on the first floor, which will reduce the labor of caring for the furnace by half, or an automatic temperature regulator can be used, which will not only secure an even temperature with less fuel but will avoid the strain on the furnace caused by forgetting to close the dampers after the fire is started until reminded of it by the excessive heat of the room. An alarm clock with a ratchet or gear arranged to trip a lever and allow the weighted damper to open is often used to turn on the drafts in the early morning.

If the house has a fireplace or two, it is not necessary to use the furnace so early in the autumn or so late in the spring, as a small grate fire in the morning removes the chill from the rooms with less expenditure of fuel. A good fireplace is a precious possession.

EXAMPLES OF HOMES WHERE SOME MODERN CONVENIENCES HAVE BEEN INSTALLED.

From the many country homes where advantage has been taken of improved appliance for comfort and the saving of labor a few have been selected as illustrations of the cost of introducing such conveniences. The cost has been furnished in each case by the owners.

One two-story house of 8 rooms has a hot-air furnace, with registers in 7 rooms. A range was used in the kitchen, so no other heat was needed there. The furnace was furnished and installed for $150. The cost of coal used in both range and furnace has averaged about $54 a year for the last four years. The following plumbing fixtures were set up, with complete supply and waste pipe connections as far as the outside of the house, for $180: In the bathroom, lavatory, bath tub, and water-closet; a lavatory in one bedroom; in the kitchen a sink and a 30-gallon range boiler; a cold-water faucet in the laundry, and a sill cock for the hose outside the house.

A six-room cottage has a hot-air furnace, with registers in every room, which was furnished and installed for $133. From two rooms the heat is shut off part of the time, and coal is not used in the kitchen range. The cost of the coal per year has been $36. Water is supplied to the plumbing fixtures through a tank in the attic. The cost of the attic tank, the bathroom fixtures, which consist of bath tub, lavatory, and water-closet; the kitchen sink and hot-water heating tank, with connections to walls of house, was $115.

A home in central Iowa has a pneumatic tank 8 feet long and 30 inches in diameter in the cellar. This tank is supplied with water and some air by a windmill, erected in common with two neighbors. There is in the cellar a smaller tank of 66 gallons' capacity, connected by a hand force pump to the rain-water cistern. Three or four minutes' pumping with the hand pump every day supplies a good pressure on the cistern water. The soft-water tank supplies a 30-gallon hot-water boiler, which is connected with a hot-water coil in the furnace and with a gasoline heater in the cellar. The plumbing fixtures consist of a sink in the kitchen and a bath tub, lavatory, and water-closet in the bathroom. Each fixture has 3 faucets containing, respectively, cold well water, cold cistern water, and hot cistern water. The three pipes are run to the laundry and faucet sets. The cost of the entire plumbing, including connections to windmill and to rain-water cistern, hand pump for cistern, steel tanks and all, but not including a share of the wind-

mill and deep well, was $300. The heating system consists of a hot-air furnace with registers in every room, there being 9 rooms and halls in the house, including kitchen and third-story room, and cost $200 to install. The average cost of fuel per year is $75.

A five-room cottage is heated with a hot-water system. The cost of material and fittings was under $200. In four years the cost for repairs has been $20.65. The whole house is kept at about 70° F., and the cost for soft coal has never exceeded $38.50 for the whole firing season.

The advantage in the hot-water system is in the fact that the water begins to circulate through the pipes as soon as the fire is built and the radiators will retain heat from five to ten hours after the fire is out.

The first-floor rooms of one home are heated by using a large wood stove in the cellar. This stove is large enough to take cord wood in full length. It is walled in with brick, and pipes lead from this hot-air chamber to the various rooms. This method gives "splendid satisfaction."

A furnace with six registers was put into an old two-story house at a cost of $125. One of the old chimneys was used for a fireplace. The grate and the tile front cost $17, and a carpenter put in the wooden frame and mantel shelf for $10. The cost of the coal per year is from $43 to $50.

Fig. 21 shows a plan of the water-supply and sewage-disposal system for a cottage near Chappaqua, N. Y. By building a stone dam about 30 ft. long, a brook was made to give a head of 6 ft. 2 in. for a compound ram located a few feet below the dam. The water from above the dam flowing through the drive pipe forces spring water through 650 ft. of ¾-in. pipe to a 65-gallon galvanized-iron tank in the attic of the cottage, at an elevation of 87 ft. above the ram. The overflow from this tank wastes into the drain for the rain-water leaders. Water is piped from the attic tank to the bath tub, lavatory, and water-closet tank in the bathroom and to the sink and 30-gallon hot-water boiler in the kitchen. The boiler is connected to a water back in the kitchen range and hot water is piped to the kitchen sink, to the bath tub, and lavatory. One line of soil pipe collects all the liquid wastes. About 10 ft. outside the foundation wall this cast-iron soil pipe connects to a 4-in. vitrified-pipe sewer, leading to a 50-gallon settling chamber, 75 ft. from the house. The effluent from the settling chamber is emptied into a line of 4-in. drain tile laid with open joints and with a very slight fall, about 10 in. below the surface of the ground. The cost of the entire system was about $200. The plumbing fixtures were procured at cost; the owner was his own superintendent, and used unskilled labor at $1.50 per day.

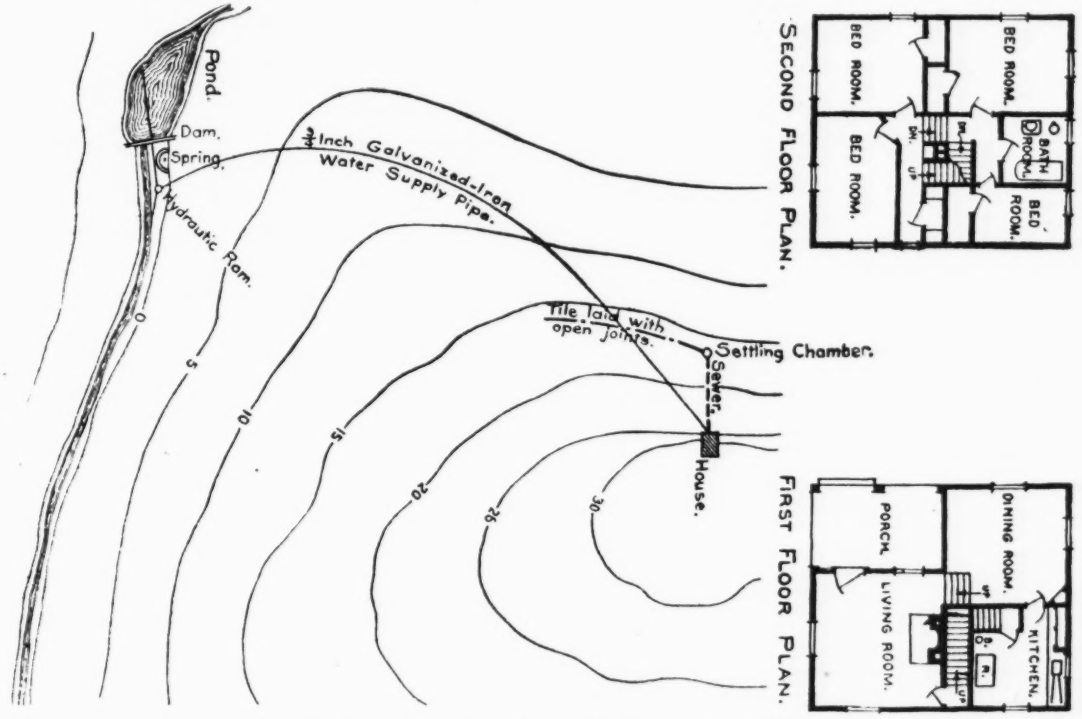


Fig. 21. Water Supply and Sewage Disposal for Small Farm.

POSSIBILITY OF INTRODUCING MODERN CONVENIENCES INTO HOUSES ALREADY BUILT.

It goes without saying that both plumbing and heating systems can be put into a house more conveniently at the time the house is being built; but if this has not been done there is nothing to prevent their being installed afterwards. The hot-air pipes from the furnace to the second floor can not always be concealed in the partitions, but a round pipe in the corner of a room can be covered with the same paper as the walls and will not be so unsightly as the usual stovepipe nor take up as much space as a stove. Little inconvenience is found in putting in the registers for the first floor.

The installation of the plumbing may conflict with the routine of the household for a week, but as all pipes should be exposed, for sanitary reasons, aside from cutting through ceilings and floors little inconvenience is met with in putting the pipes and fixtures in place. A water-back can be fitted to almost any kitchen stove to supply

heat to a small boiler, or a water coil can be placed in the combustion chamber of the furnace, which will furnish a more abundant supply during cold weather, and an independent heater, built to use any desired fuel, can be employed when there is no fire in the furnace. The waste water and sewage disposal system can be built just as well to connect to an old house as to a new one, especially if no fixtures are placed in the cellar, and cellar fixtures should be avoided if possible, especially open drains in the cellar floor even if trapped.

Fig. 22 gives a general plan of the buildings on a farm in the Santa Clara Valley, California. As the contour lines show, both barn and privy are on ground higher than the surface of the well, the privy being on ground higher even than that upon which the house stands. The privy vault is never cleaned, but ashes and lime are used once in awhile, and when the old vault becomes full a new one is dug. The water is carried up the hill to the house, a distance of 150 ft. The plan of the house as given shows the conveniences that could be added with slight changes.

An elevated tank is a favorite method of getting water pressure in California, as it is not necessary to provide against freezing, and one could be used in this case with a windmill or engine to pump the water into it. Three hundred feet of galvanized iron pipe would carry the water to both house and barn. The changes to be made in the kitchen are very simple. The bedroom closet that extends into the kitchen could be taken out and a closet ..ovided from one end of the storeroom. The storeroom is converted into a pantry. The wall of the present pantry is extended 4 ft., which changes it into a fine-sized bathroom. The sink and laundry tubs are placed along this wall, allowing all the fixtures to connect to one soil pipe. The surface disposal system could be used for the sewage, a single-chambered flush tank collecting the wastes and discharging them intermittently, by means of two sets of openings, over the steep side of the hill.

Fig. 23 gives a general plan of the buildings on a farm in eastern New York with a plan of the house, drawn on large scale, and a plan for the introduction into the kitchen and the installation of a bathroom.

At present a spring across the road furnishes water to a milk cooler, and a spring higher up the hill would furnish an adequate gravity water supply for the house. The piping of this water to the kitchen has often been talked of, but has never been done. As the kitchen wing is only one-story high an attic tank could be put in over the kitchen and the water piped from this spring to the tank by ¾-in, galvanized iron pipe. The overflow from the tank could be carried to a stock tank in the barnyard. A hot-water boiler could be connected to a water back in the kitchen range and hot water be furnished the kitchen sink, the bath tub and the lavatory. A bathroom could be made by removing the partition between the two closets and putting a window in the outside wall. The waste pipe from the kitchen sink could be connected to the soil pipe in the bathroom. The disposal of the sewage could be obtained by the use of the subsurface irrigation system, the draintile being laid in the grass lot across the drive, as shown by the broken lines on the general plan. The floor of the back porch could be extended and a woodhouse built here to furnish fuel for the kitchen range. A small furnace in the cellar would not require much more coal than the two heaters now used and would make the rooms more comfortable with less work.

The requirements of no two families are ever the same, but these suggestions of improvements are made with the hope that they may be a help in solving similar problems.

ADVANTAGES OF BUILDING FIRST ON PAPER.

With the development of good roads, the telephone, and daily free mail delivery, the farmer is becoming less isolated and desires to install the improvements of his neighbors of both country and city. The most practical way of doing this is to lay the buildings out on paper, making provision for future extension wherever possible. The buildings for the machinery and the granaries can be located so as to shut off the barnyards from the house, with space left for additions when more room is

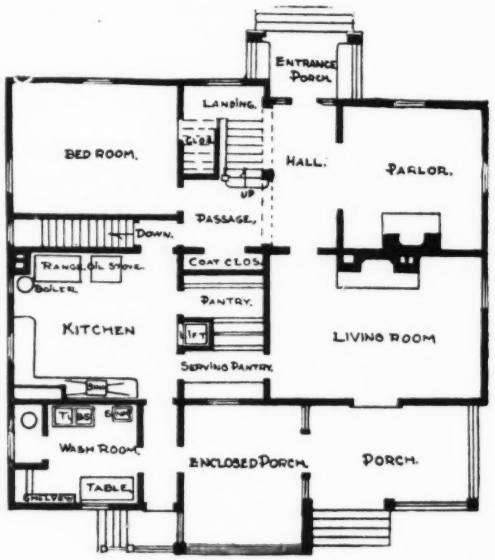


Fig. 24. Plan for a Farm House.

needed. It is not economy to house poorly any kind of machinery. In building the house two rooms may be all that are to be built now, but if a plan is made that will provide for future additions a more convenient home will finally be secured at less expense that when a room is added wherever it seems best at present without regard to the finished house. A plan that contains some of the essentials of a comfortable home is given in Fig. 24. The living room, which is the dining room, overlooks the garden and is connected with an inclosed porch which can be used for a summer dining room, the passage from the kitchen being arranged for this. The fireplaces are the best ventilators the rooms can have, as well as affording a cheerful means of warming the room in spring and autumn before the furnace fire is started. The lift carries the prepared food, that should be kept cool, to the cellar without the need of going up and down stairs. If a pneumatic tank is used in the cellar the air near it is cool in the summer and advantage can be taken of this as a substitute for a refrigerator. The kitchen sink is against the laundry partition, while the bathroom would be on the second floor and over the laundry to keep all the plumbing together. The laundry can be used for a washroom if desired, and the water-closet off of it is convenient from both outside and in.

The planning of each room also pays. Fig. 25 shows a kitchen and dairy, with accompanying conveniences. The ice-box of the cold-storage room can be filled from the porch, and a winter door is provided, so ice need

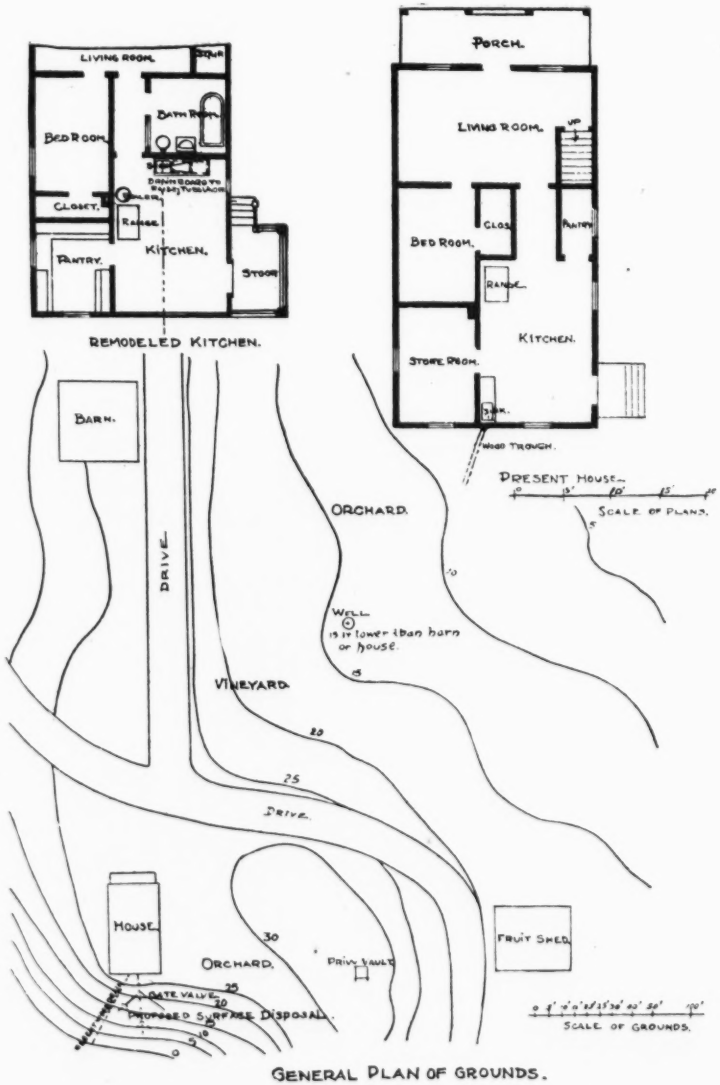


Fig. 22. Present and Improved Plan for a Western Fruit Farm.

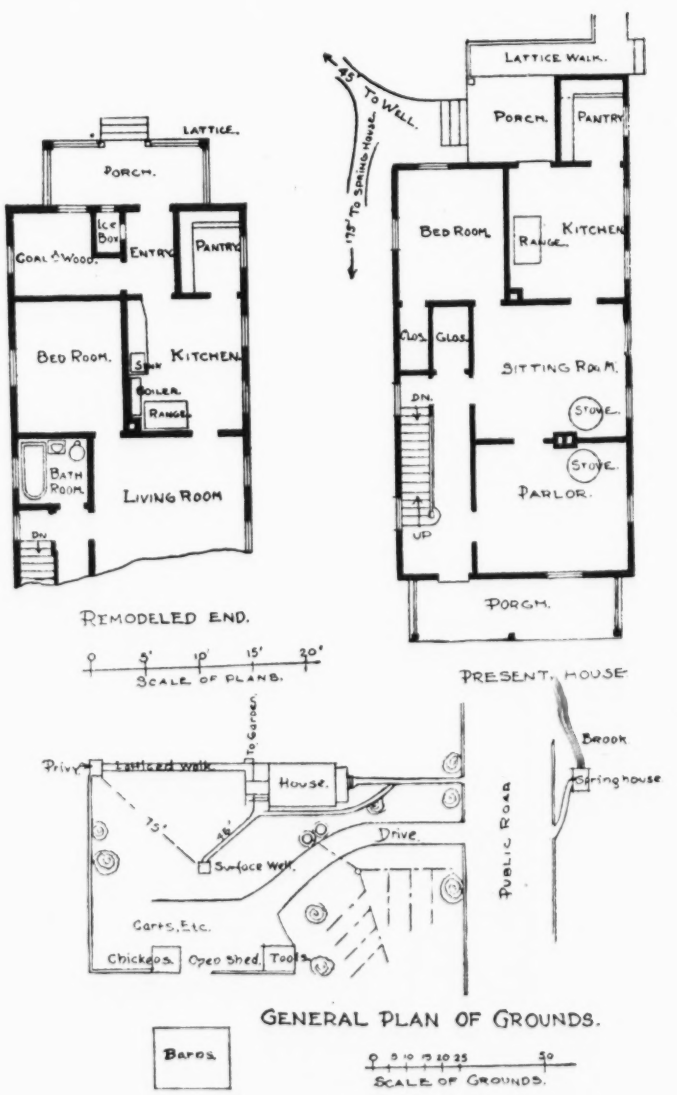


Fig. 23. Present and Improved Plan for an Eastern Farm Home.

not be used in cold weather. The kitchen sink is supplied with hot and cold water, and although the kitchen must also be used as a laundry, the stationary tubs are provided with a cover and serve as a table when not otherwise used. A lift brings the fuel from the cellar, and is used to take vegetables and fruit to and from the storeroom. Provision is made for washing dishes in the pantry convenient to the shelves upon which they

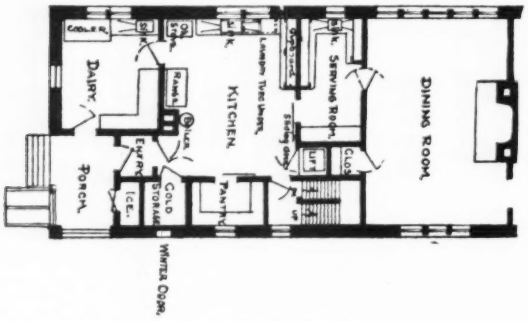


Fig. 25. Plan for Kitchen.

are kept, and plenty of shelf room is provided wherever it is needed.

The arrangement being first made on paper and lived in by the imagination many improvements will suggest themselves, until a home adapted to the use for which it is built will be the result when the plan is embodied by the carpenter and mason. The man that can make two blades of grass grow where one grew before has done something; but the man who makes one step do what took two before should also be given due credit.

ALBANY PLUMBERS' SILVER ANNIVERSARY.

The silver anniversary of the Master Plumbers' Association of Albany, N. Y., was celebrated at the Ten Eyck hotel in that city on Thursday evening, January 20th, with a reception and dinner give nin honor of Isaac J. Brown, president of the New York State Association of Master Plumbers. About 100 members and guests were present and the affair was a decided success.

At 7:30 o'clock the members and friends of the Albany association received the guests of honor, President Brown, Mayor McEwan and Speaker Wadsworth of the Assembly, in the parlors of the hotel. Afterward they adjourned to the banquet hall where they met a number of surprises. The hall was trimmed with American flags, electric lights and a huge shield on which was inscribed "In honor of President Brown. 1885-1910," outlined in electric lights. The speaker's table was decorated with plants and ferns trimmed with miniature electric bulbs. At each plate was a program, a carnation, a memorandum book, a miniature plumbing appliance and a card bearing the name of the man who was to occupy the place. "America" was sung by the assembled men, accompanied by an orchestra, and then they tackled a sumptuous repast. During the meal several parodies concocted by David M. Kinnear were sung, entitled "Ask Me to the Plumbers' Banquet," "Come On, Let's Roast the Plumbers," and others.

President Nolan of the local association acted as chairman of the meeting and he started the ball rolling with a short introductory speech in which he expressed sorrow at the fact that the regular toastmaster, Frederick W. Ridgeway, was ill and unable to be present, and appointed John E. Dugan to take his place.

Mr. Dugan rose to the occasion and delivered a speech which kept the diners laughing, and concluded by telling several good stories.

He then introduced John L. Fitzgerald, ex-president of the association, who welcomed the guests in the name of the organization, and introduced the speakers of the evening: Isaac J. Brown, who received wild applause; Speaker James W. Wadsworth, who received a long and continued ovation and was greeted as the next governor of the state, and Mayor James B. McEwan, he also getting his share of the applause. Mayor McEwan got off easy in the line of a speech and kept the crowd in good humor for some time by his witty remarks.

Impromptu speeches were made by former National President T. A. Hill, New York, on "Any Old Thing"; Wm. G. McCormack on "The Trade Press"; Fred W. Zander, Buffalo, spoke on "The Supply Men," and gave a recitation of "Hoch, der Kaiser"; M. D. Riley, Albany, spoke on "The Legal Profession," and James Martin, also of Albany, sang "Put On Your Old Grey Bonnet," all those present joining in the chorus. President Brown expressed his appreciation of the honor which had been bestowed on him by the association and thanked them one and all for the treatment which he had received during his brief stay in Albany. He went into the history of the founding of the association to some extent and closed with the hope that the benefits of the organization would prove lasting and beneficial.

Letters and telegrams of regret were received and read from Governor Chas. E. Hughes, Lieutenant-governor Horace White, former state presidents Chas. B. Huck and Frank L. Beyer, of Buffalo; Chas. A. Campbell, Watertown, N. Y., treasurer of the state association; Chas. E. Ames and Chas. A. H. Kienzle, of Syracuse; John R. Sheehan, Schenectady; E. V. Cady, Cohoes, and Peter Adriance, Poughkeepsie.

The reception and dinner committee which did noteworthy good work was composed of the following gentlemen: Frank F. Schimpf, chairman; James H. Doody, secretary; James F. Martin, T. E. Kerwin, John E. Dugan, James J. Gorman, treasurer; Albion J. Eckert, Fred W. Ridgway, Thomas F. Nolan.

Those present at the banquet were: Isaac J. Brown, state president; Hon. James W. Wadsworth, Jr., speaker New York State Assembly; Hon. James B. McEwan, mayor; B. Joseph O'Donnell, Thomas F. Nolan, Frank F. Schimpf, John E. Dugan, John L. Fitzgerald, David M. Kinnear, James H. Doody, Fred C. Fladd, George Bay, Louis J. Yauchzi, Joseph Hobson, Fred W. Zanders, John D. Chism, Jr., T. A. Hill, T. S. Cochrane, Jr., B. F. Donahue, A. S. Gaynor, George H. Creary, B. A. Buge, J. P. Knight, Frank J. Fee, J. L. Murphy, F. B. Lasette, W. J. Bapst, P. F. Kenny, Chas. Murphy, Alex Brown, E. J. Renehan, C. A. Walsh, J. V. McEvily, T. J. Cummins, J. F. Griffin, J. J. Falihee, J. R. Hopkins, W. J. Fowler, J. J. Hannigan, D. Deigan, J. P. McCann, Horace F. Wescott, Peter A. Buckheim, Herman Picard, Wm. Branion, Harry King, Thomas J. Berkstresser, T. E. Kerwin, William J. Rice, Wallace Greenalch, William Brownlow, Ed. P. Kerwin, Wm. G. McCormack, John H. Moran, John F. Donovan, M. E. McNamara, George Russell, James Feeney, P. J. Downey, Thomas A. O'Malley, Wm. Fiefield, Frank V. DeForest, Jr., Jerome F. Kieley, Ed. Kenny, Charles Walsh, William Smith, James Martin, John Drew, Z. A. Moss, Raymond Dutsch, Howard N. Fuller, Jas. Crosby, Andrew H. Brown, W. R. Campbell, Thomas J. Dugan, Albert J. Eckert, Wm. Ballard, Samuel Eggington, John Waldbillig, R. E. Derby, P. F. Mead, John J. Britt, Fred W. Gaylord, A. E. Gray, Anton Goetz, John Barrett, William R. Smith, James J. Gorman, M. D. Riley, Jos. P. Maguire, Ed. Aherns, R. E. Hall, P. J. Lanon, James J. Nolan, Lea Doody, John H. Moran, Jr., J. Howard Johnson, Chas. Murphy, Frank Moran, Curtis Oliver, William Miller, Wm. Robinson, Thos. Peirce, Walter P. Renker, E. McKenna, Albert E. Dale, Robert Davison, Wm. A. Allen, S. J. T. Coe.

ALL ST. PAUL PLUMBERS TO SECURE LICENSES.

Journeyman plumbers in St. Paul, Minn., carried their point before the council committee, which was considering the new building code this week. After the code becomes a law, journeymen will all be licensed. The proposition was opposed by a majority of the code commission and by several master plumbers.

NEW PLUMBING BOARD NAMED.

Edward Farley, a master plumber, and John Gille, a journeyman plumber, Kansas City, Mo., have been appointed by Mayor Crittenden to be members of the board of examination of applicants for plumbers' licenses. The other members of the board are the city engineer, superintendent of buildings and city supervisor of plumbing

THE EXPERIMENTS OF A WOULD-BE CRAFTSMAN.

By Charles B. Starkey.

In the direction of the rising sun several years ago there lived a man who was a source of joy to the plumbers.

Deacon White we will call him, although his name looked a trifle differently from that upon his business stationery.

Now the Deacon was a natural born mechanic—or thought he was—and dearly loved to tinker around the house wherever he was not wanted, and the greatest joy of his life was to get in with the plumbers or carpenters and assist. Besides he had a great head for short-cuts, or unusual ways of doing jobs. He read much on all kinds of topics and any plan that suggested economy looked good to Deacon White. It did not matter if it cost a thousand dollars to put the plan through—the Deacon never looked at the outlay in the matter—the plan went —even though it might effect a saving of perhaps twenty dollars a year only.

However, the Deacon had one good quality, which viewed from the standpoint of business, was a fair offset to his somewhat peculiar ideas. He never objected to the price charged for work, and he did not kick on the amount of time it took to do a job.

Good old Deacon. Would that there were more like him in that respect at least.

He went by fits and starts. If a closet or radiator did not look good to him as time wore away, why it was "pull it out and put in another," or "what do you think about the merits of the X. Y. Z. double jointed self-shaking, automatic-feeding, never-exhausted steam-boiler? I believe I'll put one in this fall, for I think it would run on five tons less coal per season than my present boiler burns." Say, the Deacon, in the course of about ten years had no less than eight different boilers "hooked up" to his steam job, and plumbing—well I'll get to that in a few moments. I want to relate a little incident which shows his passion for experiments.

Although the steam job heated his house in fairly good shape, the Deacon thought he could go the layout one or two points better if he got his thinker going properly. So he studied the matter up at odd times and as a result decided to install a hot-water system which could be operated in the fall and spring of the year, "just enough heat to remove that chilly feeling between the shoulders," as he expressed it.

So he got busy with the heating man and had the plant put in. Now his idea was to get a good pressure on this job—it appears that in this he was years ahead of the times—and he used a big tank that was up in the attic for this purpose; but he argued if one pipe from the tank to the heater is good, two will be better, and so he insisted that both pipes be run. He simply refused to be convinced when told what would happen. It did all right, and the water in the tank fairly boiled while all the radiators down stairs were nearly cold. Did the Deacon tear around and kick and raise hob generally? Well, hardly. He simply had the job changed over, remarking that it "was one on him" and he paid the bills cheerfully.

Now in those days, and more particularly in the small city in which these events took place, the manner in which some plumbing jobs were put in was rather crude. For instance, the first outfit installed in the house the venting upon the job consisted of a one and a half-in. pipe which vented the main trap into the chimney.

It may be stated that there was no plumbing inspector at that time in the city. During this period of eruptive ideas the Deacon happened to amass some literature upon the subject of "sewer-gas." Its horrors were depicted with a vigor which held the attention for hours, and he pictured all kinds of vicious microbes floating throughout his residence. That plumbing must come out and come out it did and about every place where a vent or a re-vent could be placed, there it was located, the Deacon standing guard meanwhile. It was during this upheaval that he acquired the idea of changing over his kitchen and in so doing he added several appliances and when the time came to locate the range boiler it was found that the only place where it could possibly stand was in the corner at the other side of a door and in such a manner that the hot water pipe from the water back to the range boiler must be carried over the door. This displeased the Deacon's eye for the fitness of things, and he made the plumber run this pipe under the door. Of course the range boiler did not heat and the pipe was finally placed where it should have been in the first place—and the Deacon paid the bill and laughed. As time passed the old fellow acquired a varied assortment of plumbing and heating apparatus and his ideas were "according." It became more difficult to untangle the various systems in order to make the changes which were desired, or which sometimes were necessary.

The day came when he called a plumber to make some changes, that the mechanic objected and said: "Look here, Deacon, how much have you paid out on this blamed junk pile, anyway?"

Well, to make a long story short they figured matters over and found that the Deacon, up to that time had paid out something over four times what it would have cost to have a responsible plumber and fitter fit out his house in a first-class manner, and the Deacon had certainly one of the most mixed and jumbled-up jobs ever seen. "Now I've got through monkeying with your work, Deacon White," said this plumber and the only way that I will do anything for you is to tear into this system and fix it as I know it should be fixed. You take a vacation, Deacon, and stay off the job. I will guarantee my material, figures and work. If that goes, why all right. If not, call some one else." The Deacon shied off for a while but finally gave his consent.

The boys took out enough pipe from the Deacon's house to do another job of the same size, while the hot-water heating system was removed entirely. When the steam heating system was fired up, after it had been properly installed, it furnished ample heat or little heat as was desired. At last the Deacon's trials were over. He had a system that worked and he paid the bill without flinching. His main trouble before had been that he wanted to boss the job and have his own way in spite of all.

Yet, it must be stated, that now and then as he looked over his books or papers a gleam would come to his eye and he would say, "I believe that my plumbing"——, but he never got any farther, for the whole family at once set up a howl and the Deacon would escape to the barn in order to find quiet.

The Powers Plumbing Co., Rome, Ga., has been incorporated with a capital of $2,000 to conduct a plumbing, heating and gas-fitting business. The incorporators are H. A. Powers, S. J. Powers and W. J. Nunally.

Fred Hayes, Bristol, Tenn., has moved his plumbing establishment into his new building at 514 Cumberland St. in that city. The fine display of plumbing fixtures in his large show-windows is attracting much attention.

THE BEAUTIES OF A HEATING CONTRACT.

By Phoenix.

The boy came into the shop and with a disgusted air threw the bill upon the desk. "That man, Robinson, makes me tired," he exclaimed. "What's the matter," exclaimed the boss, "what kick did he have coming on the job? I thought we fixed everything up satisfactory." "Oh, the job's all right, but he refuses to pay for the extra work we did when we connected up for the temporary heat."

"So that's his holler, is it?" said the boss. "Let's see the contract a moment." Now, this is one of the cases where the heating contractor did not forget, for he read: "If temporary heat is required, involving the labor of connecting radiators the second time, a charge of two dollars shall be allowed for each radiator so connected, and during such a time as the apparatus is run temporarily for the benefit of mechanics or for drying purposes, it will be at the risk of the owner of the building, who shall be responsible for the proper care of the apparatus during the time it is so used, and he shall also see that it is maintained in as good condition as when taken for the above-named purpose. Further, should the radiators and pipes become rusted or covered with lime while being used for such purposes, an extra charge shall be allowed amounting to five dollars."

"Well, I guess Robinson will pay that bill," remarked the boss.

And Robinson did, but he never went into that shop again.

This was somewhat unfair to the heating contractor, but there are some people whom it seems impossible to satisfy, and they are the parties whom it's better to let go, for it is clearly impossible to please everybody. With the best intentions in the world on the part of the heating contractor, some one or another of the customers is going to raise a kick. It is therefore an entirely safe proceeding to have a good contract on the job before it is started. It prevents misunderstanding and both parties know exactly what to expect. It is the only way to do work and perform it in a businesslike manner.

A contract entirely fair to both parties should contain at least the following items:

First: The manner in which the job shall be constructed, or perhaps the word system, would cover it better.

There should be no doubt or indefinite language upon this point, but the apparatus and system should be briefly and clearly described in a manner which may be understood. For instance, to say "Hot-water heating apparatus" is not sufficient. State exactly what kind of an apparatus it is, whether open, atmospheric or pressure system. Likewise regarding steam. There are at present several different ways of applying this kind of heating. Be explicit!

The boiler should be referred to by name and catalogue number. It is better to give dimensions and grate surface, the latter especially in order to avoid any chance for misunderstanding and charges of fraud. The tools going with the apparatus should be mentioned, also proper draw-off cocks and connections to waterworks system and sewer. State also how far, that is, to what point such service-pipes shall be laid by the heating contractor. If heating contractor is to furnish foundation to boiler have it so stated. Many owners furnish the foundation, but some contractors prefer to do this part of the work for themselves.

Do not forget to stipulate regarding the chimney and be sure just what kind of a smoke-pipe is to be provided. It is a good point to insert a phrase here to the effect that the owner shall provide the fuel for testing the apparatus.

Specify the quality of pipe and fittings and state whether or not the risers shall be run outside or inside the partitions.

In a hot-water job state the size of the expansion tank in gallons; also its location and manner of support, the overflow, drain and glass. The style of floor and ceiling plates should be described. The valves and air valves for radiators should be described in no uncertain fashion. The radiation should be given accurately. This is best given by arranging according to a regular schedule headed: Rooms, number of radiators per room, square feet of radiation, manner of rating, the height of radiators, indirect radiation, style of radiators and temperature of room. Other items can be added to this schedule, such as exposed wall, glass surface and cubic contents.

This, in duplicate, will give a complete record of the job for the shop.

Another clause of self-protection for the heating contractor should be inserted to the effect that if the building is changed or altered in any manner differing from the plans, in such a way that it would have any effect upon the heating apparatus, the guarantee will not stand.

Coming now to the manner of guarantee this is an open question. No contractor should agree to heat any building to anybody's satisfaction. Neither would I agree to heat during the coldest weather. Such phrases are too indefinite and admit of misunderstandings. It would be better to specify the temperature in degrees, both outside and inside. Say, heat the rooms 68° Fahr. with zero temperature outside.

The term "extras" is also a source of much difference of opinion. An "extra" is anything which adds to the cost of the job and which was not in the specifications. This may be some such item as a permit, an extra coat of bronze, etc. Bronzing is not mentioned in these items because in many cities the steam fitter no longer bronzes or paints the radiators, such work being done by the painters. The owner should be notified when the job is done and required to inspect and either accept or reject it, and if he refuses to do so, the job should be left in his charge.

Regarding defects in the job whether relating to goods or workmanship a clause should be inserted to the effect that the term should not be interpreted to refer to accidents, improper use of the job nor the natural wear and tear on the heating system. The boiler covering and pipe covering should be stated in a lump sum, and the terms on which the payment for the job is to be made ought to be named in a manner which admits of no argument upon the side of either party.

There are other points which could be inserted, but these in general are the most important.

Why have I now named all these points? Simply because there are people in this business who are foolish enough to engage in the task of putting in a plant with not as much as the scratch of a pen to show where they are going to get off at. Work done in such a manner is a mighty uncertain proposition, for one can never tell just in which direction nor how far the customer is going to jump, and likewise the customer (provided there is a contract) knows just what he is entitled to receive. Get a good contract form out and have the job down in black and white.

J. E. Farley, Grand Rapids, Wis., has secured the contract for the installation of an up-to-date plumbing system in the G. B. & W. depot in that town.

The Fifth Annual Meeting of the American Society of Inspectors of Plumbing and Sanitary Engineers

Held at Trenton, N. J., January 20-22, 1910

Historic Trenton, 250 years of age, whose name is indissolubly linked with the earliest annals of our country and whose cradle was often rocked disturbingly by the once-up-on-a-time Indian freeholders, descended from its recollection of the pipes of peace to a consideration of the present-day Indians, with their pieces of pipe. The air was fully of Y's and wherefores and the city assumed its most sanitary air.

The Chamber of Commerce of Trenton and the Trenton potters vied with each other in manifesting their goodwill to the conventioners from the first arrival to the last departure. Moreover, the extent of their attentions and lavishness of hospitality bespoke weeks of careful planning of hard work, and of conscientious attention to detail. Trenton shall from henceforth be emblazoned on our minds as one of the convention-city stars.

The convention proceedings commenced at 11 a. m., Jan. 20th, Thursday morning, President Charles B. Ball, Chief Sanitary Inspector, Health Department, Chicago, wielding the gavel with his characteristic vigor. The morning was devoted to registration and the consideration of the work of the committees on tests and standards in a preliminary way.

In the afternoon at 2 p. m. the Hon. Walter F. Madden, M. D., mayor of Trenton, officially welcomed the association and extended to it the city's privileges.

Francis B. Lee, of the Trenton Health Board, gave a brief talk on the history of the city, whose life he stated, commenced 28 years after the Pilgrim Fathers adopted the Plymouth Rock as their coat-of-arms. He eulogised the Trenton potters and the important part their products play on the national sanitary stage, a part of which Trenton is justly proud and commercially benefited.

Dr. A. S. Fell, health officer of Trenton, added to the expression of the city's welcome to the advocates of national health measures and gave credit to Plumbing Inspector George W. Feister for bringing the convention to Trenton.

An Auditing Committee was appointed, consisting of F. Dumond, O. B. Craig and C. I. Putts.

Questions to be referred to the committees and the Board of Governors were then discussed and the meeting adjourned.

The evening session opened at 8 p. m., the first item on the program being

THE PRESIDENT'S ADDRESS.

By Chas. B. Ball, Chicago.

The American Society of Inspectors of Plumbing and Sanitary Engineers, assembled today in this fair capital city for its fifth annual meeting, may profitably engage your attention in a brief review of the accomplishments of its lusty infancy, of its present status, and of our hopes for its future usefulness.

Meetings.

The charter members here present can readily recall the first meeting held in Washington on Jan. 29, 1906, attended by twenty-five enthusiastic gentlemen eager to blaze a path for future generations. The successive conventions held at Cleveland, Chicago and Omaha have been marked by increasing numbers and greater appreciation of the value of the young society. Its serious purpose has been ever manifest, but it has always promoted good fellowship among its widely separated members, until its position as the one important function of the year to most of us is now assured.

Membership.

The steady growth in numbers, while mainly due, as it should be, to additions from the ranks of inspectors, has also resulted in placing on the rolls quite a numerous company of men noted for their contributions to plumbing literature and design, and able and willing to render good service to our organization. In geographical range, the society now extends from Halifax to Honolulu and from Winnipeg to Panama. It is, at the present time, a distinct loss of prestige for any inspector of plumbing in this wide-spread area not to be a member of the society, as it is, on the other hand, a loss to the society not to receive his support and contributions. It offers to the young sanitary engineer his best opportunity to test his theories with the touch-stone of long established rules of practice in the plumbing art. The sanitary engineer has too long limited his practice to the bringing of a pure water supply to the building, or the taking from it, its liquid wastes, without likewise concerning himself with the intricate problems of the transmutation of the pure water into sewage. The sanitation of buildings must, more and more, engage the attention of our best trained technical graduates, and membership in this society is an important aid to this end.

Publications.

The papers read at the conventions and the discussions which have attended their presentation, have been widely disseminated through the unexampled co-operation of the trade press and are, therefore, familiar to you all. When assembled in the volumes of proceedings, these constitute a measure of progress in plumbing design without a parallel. It will interest you to know that copies of these proceedings have been gratuitously placed in twenty important libraries and are also for sale by the Society at cost to any purchaser.

Plumbing Codes.

It was an original aim of the founders of this organization to formulate at the earliest practicable date, a universal code governing plumbing construction in town and city, and no meeting has passed without hopeful expressions having this end in view. Many of our members have engaged in the framing of code provisions and amendments and in one case, that of Cleveland, O., a complete and comprehensive ordinance was constructed which some of us heartily praise for its subject matter, but feel compelled to criticise as unwieldy in form. It seems out of the question for the society to secure the time and energy of its members sufficient to draw up an entire code, but it does not seem hopeless that this work may be accomplished in the end by taking up a chapter at a time. Is it not possible this year to have a com-

mittee work on such a draft of provisions for the house drain, for instance, and express their recommendations in definite form at the next annual meeting? On disputed points, such as the material of the drain, the introduction of a main trap, etc., the draft should provide, by alternative sections, its adaptation to the wishes of any city authorities desiring to deviate from the recommendations of the Society.

The Competency of Plumbers.

The standards of design and construction set by this society cannot be realized in any community where skillful plumbers are not found. The old-time criterion of a plumber's craftmanship, his ability to wipe a joint, is fast pasing with the decrease in the use of lead as a material for piping. Whether we rejoice or lament, the fact remains. New standards of competency must now be set up. The present-day plumber must possess the ability to design sanitary systems alike in cottages and skyscrapers, and to construct them safely from the new materials, in every class of buildings, whether their walls be of frame or brick or concrete.

The boards of examiners of plumbers, who shall determine the competency of both masters and journeymen, may, in most cases, properly include the inspector of plumbing, and must not exclude, if their work is to be of the highest grade, the trained sanitary engineer.

Civil Service Appointment of Inspectors of Plumbing.

We have been compelled to note, at each successive annual meting, the loss, through political changes, to the public service and to this society, of a number of able and faithful inspectors. The society may well proceed, by the appointment of a special committee, to collect complete information as to the status of inspectors of plumbing of all grades. We ought to know the qualifications imposed, the methods of appointment to office, the salaries paid, and especially the results obtained under civil service. We should, by every proper means, promote the application of civil service methods of appointment and secure a tenure of office depending only on the rendering of faithful, efficient service.

Federal Promotion of Public Health.

Although it is a noteworthy fact that the disitnguished list of names constituting the Committee of One Hundred on National Health contains no sanitarian who is not a physician, this fact should not be held to be a reason for failure on the part of the society to co-operate in the movement for a national bureau of health. It is known to be the intention of Presiden Taft to send a message to Congress, advocating the consolidation and enlargement of existing federal health agencies. This message will doubtless result in the framing of a bill to accomplish a degree of co-ordination in these regards. Such a bill should receive the hearty support of our organization and of each member in his individual capacity.

Co-Operation.

Co-operation is the striking characteristics of our age and of our civilization. We have learned that no man is strong enough to stand alone or broad enough to absorb all knowledge, or long-lived enough to accomplish all that he finds worthy of achievement and, therefore, we are drawn together for mutual sympathy and mutual help to a degree never before known in the history of mankind. This society stands anxious to join hands with every agency which has for its aim the improvement of public health, and especially those which work to this end by means of sound and well-planned plumbing.

Public Conveniences.

The society has stood for the establishment of public comfort stations in all our cities, and mainly through the special effort put forth by one of its members, Mr. Jno. K. Allen, has succeeded, by agitating the matter and publishing literature on the subject, in securing the establishment of many of these stations. This is a field in which every member can actively co-operate with the society, both by efforts of publicity in his own locality and by the publication of data as to the cost of buildings and the operation of such stations. Every inspector of plumbing should engage actively in this campaign for decency, cleanliness, convenience and good health.

Factory Sanitation.

Factory sanitation, in its broad division of plumbing, ventilating and heating, of lighting and cleaning, has not received the study which its importance demands, when compared with investigations in similar lines. There is available, for instance, in technical libraries, a large number of books containing many profitable studies and conclusions in respect to school buildings in these regards, but there is nowhere any complete thesis upon the sanitary problems of the workshop. The installation of factory plumbing gives rise to many vexing questions by reason of the varying classes of employes whose convenience is sought, the few types of fixtures suitable for these uses, and the varying limitations of the locations in which these may be placed. Our society could inaugurate further study of these subjects, and when conclusions are reached, publish them so as to constitute certain authoratitive dicta applicable to factories.

The Testing of Plumbing.

Although the proceedings of the society contain a number of papers which consider the need of testing plumbing systems as to their security, and others which discuss methods for making tests, there has been but slight progress in these regards during the past five years. The practise is still unsatisfactory in most cities, and indeed much completed plumbing fails to be subjected to any test whatever. As to existing plumbing, it is well recognized that grave defects occur in a large proportion of the older installations and especially where earthenware drains predominate. Not much labor would be necessary to put in form a definite statement of the approved methods of applying the various kinds of tests, their comparative value, and the conditions to which each is applicable. If this were done and it received the approval of the society, a basis of advance would be available for application in cities where the practice is lax.

Conclusion.

The development and usefulness of our society will always depend upon the devotion of its members to truth and the common good. If they continue, as in the past, to give of their time, money and service to advance its interests, its value to all will still increase in greater proportion than heretofore. Let no one think we fail because we differ in our views. Truth is a warrior. It invades the haunts of error. It loves combat. It prevails by conquest. Men cannot crush or destroy it. Let us serve truth with confidence and new courage. I have firm faith in your purpose to render this service and, therefore, a fixed conviction that the American Society of Inspectors of Plumbing and Sanitary Engineers is but in the infancy of an extended career of usefulness to mankind.

The remainder of the convention's working program was carried out on Thursday evening, Friday morning and evening and Saturday morning and afternoon, the convention adjourning on Saturday at 6 p. m.

On Friday afternoon, the delegates were conveyed in different groups to the various interesting potteries of Trenton. Special preparations had been made by the potters to exhibit at the time of these visits, different types of sanitary ware in their successive stages of manufacture. To many of the visitors, this was a revelation of the intricacies of manufacture of the goods with which they came daily in contact. The courteous guides patiently answered the innumerable questions fired at them and we feel assured that the cause of sanitation will be advanced by the knowledge acquired.

Election of Officers.

The election of officers resulted in the following appointments: President, W. G. Williamson, Detroit, Mich.; first vice-president, Edward G. Kane, Wilmington, Del.; second vice-president, C. I. Putts, Jr., Baltimore, Md.; secretary and treasurer, Thos. J. Claffy, Chicago, Ill.

Board of Directors—Chas. B. Ball, secretary; Edward Quinn, St. Louis, Mo., and Chas. R. Schmidt, Baltimore, Md.

Special ballot was then taken for the next meeting place, resulting in the choice of Milwaukee, Wis.

The convention concluded with a complimentary banquet on Saturday night, the memory of which will be retained by all present through years to come by its good taste from both a gastronomic and aesthetic point of view. A report of this "feast of reasoning and flow of bowl" concludes this article. We now present to our readers a synoptical review of the work of the convention, a full consideration of the different papers being given in later issues of "Domestic Engineering."

Sanitary Earthenware.

Edward C. Stover, Assistant General Manager of the Trenton Potteries Co., Trenton, N. J., exhibited a series of interesting lantern slides, showing the details of the manufacture of sanitary products in the Trenton potteries. These pictures were quite representative as they included views of the leading Trenton plants. Mr. Stover called attention to the principal features of each slide.

The Evolution of Water-Closet Manufacture.

This paper was contributed by Wm. B. Maddock, of John Maddock & Sons., Trenton, N. J., and presented concisely a review of the progress of human knowledge in matters of sanitary science. House drainage, plumbing, ventilation—these were touched on here and there during this general review. Mr. Maddock commenced his sanitary journey in 1878, and gave consideration to the essentials of the water-closet construction, enumerating the different types and showing the surprising ingenuity exercised in the progressive modification of shapes and types. The paper was accompanied by a number of magic-lantern slides. The lecture and its illustrations terminated with the siphon-jet closet, which at the time of its first introduction was considered the ne plus ultra of sanitary changes, but this position has already been assailed by prominent sanitary engineers of the day.

Standardization of Plumbing Material.

By Eugene S. Willard, Detroit, Mich.

At the Omaha meeting, Mr. Willard presented a paper on this subject, as a result of which a committee was appointed to meet a committee to be appointed from the manufacturers and jobbers of plumbing supplies. The Central Supply Association appointed such a committee representing manufacturers of soil-pipe, some members of which were also contributed by the National Association of Master Plumbers. The committees secured data on soil-pipe wall-thickness, depth of hub and other details for standard and extra heavy soil-pipe from 2-in. to 6-in. "Report on this work will be presented in due course," said Mr. Willard. He recommended continued and increased effort for standardisation and suggested the advisability of standardising of closet-trap sizes.

Siphon Jet Closets: Can They Be Improved?

By Chas. R. Schmidt, Baltimore, Md.

This paper, effectively illustrated by lantern slides in its first half was a concise and interesting summary of the author's 35 years' experience in closet design. It effectively showed the early attitude of this country in copying European methods and adopting their apparatus as a standard and defined distinctly the divisional point in our history marked by the invention of the valveless siphon closet in 1884 by G. E. Waring. From that time the United States has occupied first place in this field.

The evolution of this type was described, Mr. Schmidt telling of his designing a simple form of siphon closet in 1887, which did away with Waring's weir below the floor, brought the complete closet above the floor line and provided an effective venting for the closet outlet. The essential means to this end were a short bend or projection on the outer wall of the long leg for water deflection and the jet.

Mr. Schmidt said that in twenty years, this type of siphon-closet structure has remained virtually unchanged, save in minor details. He then considered the steps that had been taken and should be taken to simplify the siphon closet. Gilden's pitless closet with vertical outlet passage and the tank changes were reviewed and commented on and the author suggested the following changes in the present design:

(a) The lengthening of the siphon leg to increase siphonic efficiency.

(b) A vertical outlet passage.

(c) A series of deflectors in this passage, zigzagging the water throughout its descent and avoiding all choking effect.

The results claimed by such changes were—a more rapid dissolution of the excreta, efficiency with either high or low-down tanks, discarding of jet, greater cleanliness, reduction in water usage and less distance in installation to the soil-pipe stack fitting.

Development of Sanitary-Ware Bodies in the United States.

By Edward C. Stover, Trenton, N. J.

In this paper were set forth the distinctions between "vitreous," "solid porcelain" and "extra heavy vitreous" wares. The nature of their bodies was explained, all the statements tending to prove the great advance of the sanitary production in this country and its superiority to the European wares. Quite interesting was the information on the "solid porcelain" goods, made from a fireclay mixture, and comprising in their range—laundry tubs, kitchen sinks, lavatories, slop sinks and special hospital fixtures. Sanitary wares were first made in this country in 1871.

Closet-Bend Ventilation.

By W. H. Jennish, Waterloo, Ia.

Mr. Jennish stated that a great amount of money could be saved the property owner, without jeopardising the work, and this mostly on closet-bend ventilation. He is not willing to concede that a waste line wiped into a closet bend will break out along the solder line from expansion and contraction of the waste line. He believes that the only good of a vent is to prevent siphonage and if this can be prevented without the vent, it is a waste of money to put it there. He does not, however, wish to be understood as advocating long runs from a stack and setting the closet on a dead end. In a greater closet distance than three and one-half feet from the main stack and without a waste line, the bend should be vented. The best job is the one with the smallest amount of pipe and fittings commensurate with efficiency.

The Evolution of the Water-Closet.

By Herbert S. Renton, Chicago.

Mr. Renton delivered an illustrated lecture on the evolution of the water-closet which was encyclopaedic in its character. It commenced with the primitive hopper and traced the evolutionary advancement to the modern advanced siphon type. We hope to reproduce illustrations and full text of this historical article in the near future.

The Privy, Its Uses, Abuses, Dangers and Arraignment.

By Burton J. Ashley, Chicago.

Mr. Ashley's paper contained a thorough history of the privy from the time of Moses and up to the present day, followed by a description of its construction, without a vault and with a vault, its sensible use and correct maintenance. This paper also described its abuses in cities and farming communities, and pointed out the serious dangers that follow the neglect of proper care of privies. It closed with testimonies from the boards of health of more than twenty American cities, all condemnatory of the privy, considering it a disease-breeding nuisance.

Distinctive Work and Equipment of Public Comfort Stations.

By Frank K. Chew, New York City.

Mr. Chew's paper advocated the desirability of selecting a distinctive mark to be placed on public comfort stations in such a manner and in such a conspicuous place that it can be recognized in any language as is the Red Cross by those who need medical and surgical aid. This paper also called attention to the desirability of special equipments for women's public comfort stations.

The Plumber and The Inspector.

By O. B. Craig, Pittsburg.

The relation between the plumber and the plumbing inspector should be one of mutual confidence, harmony and co-operation, according to Mr. Craig's paper. Each should assist the other in an effort to comply with the requirements of sanitary science and the laws as embodied in the plumbing codes. The exercise of a little common sense, coupled with a touch of the golden rule, was dwelt upon as a means of preventing unnecessary friction between the plumber and the inspector and as going a long way toward the uplifting of the plumber's calling as well as preserving the health of the community.

The Plumbing Inspector and the Board of Health.

By Thos. J. Claffy, Chicago.

Mr. Claffy's paper brought out the fact that there is a tendency in many cities in this country to bring the plumbing inspector within the jurisdiction of the building commissioner, because this in many ways is more convenient for the plumber and the contractor. It advocated the desirability of having the office of the plumbing inspector under the jurisdiction of the board of health, because good health depends upon good plumbing. It also emphasized the necessity of having good plumbing laws worded in such a manner that the inspector can enforce them without difficulty.

Exact Plumbing Design.

By John D. Small, Chicago.

Mr. Small's paper emphasized the advantage of having exact plumbing plans and designs as the best aid in complying with the numerous requirements of rules and regulations governing such installations and to avoid difficulties arising during construction of buildings due to a lack of provision for concealed pipes, proper space, etc., while the general building plans are being developed. This paper was, by way of an object lesson along this line, accompanied by illustrations from the plumbing plans of one of the new skyscrapers in Chicago, designed by the author.

Factory Plumbing, Sewerage and Ventilation.

By Philip Mueller, Decatur, Ill.

Mr. Mueller's paper was illustrated by lantern slides and discussed Factory Sanitation from two standpoints—the one as it affects the uneducated class of laboring men and the other as it affects the mechanics of a better grade of living and intelligence. Systems suitable for both classes of workmen were described and illustrated in a most thorough manner and a noteworthy feature was the fact that the system under discussion for the better grade of mechanics is one that is installed and giving perfect satisfaction at the Mueller factory in Decatur, Ill.

Lavatories and Urinals.

By Charles Weelans, Trenton, N. J.

This paper was a most interesting essay containing a condensed history of the manufacture of earthenware urinals and lavatories in America as well as a terse description of the process of manufacture.

Public Comfort Stations.

By W. E. Hinsdale, New York City.

Mr. Hinsdale's paper contained many valuable pointers on what to avoid and what to secure in the construction of public comfort stations, laying stress on the desirabilty of installing fixtures that will, as near as possible, take care of themselves.

Factory Closets.

By George W. A. Butler, Erie, Pa.

Mr. Butler's paper gave in a terse language his many and varied experiences with water-closets of different types in mills, factories and public buildings.

The Use of Three-Inch Soil-Pipe for Water Closets.

By Thomas M. Landers, Richmond, Va.

Mr. Landers' paper gave expression to the opinion that it would not be wise to reduce the size of soil-pipe from 4 in. to 3 in. because the danger of siphonic action upon the seals of all smaller traps would thereby be greatly

increased. Another objection this paper raised against the 3-in. soil-pipe was its liability to stoppage. It admitted that under certain conditions a 3-in. soil-pipe could be used with good results, but this was only in exceptional cases. It held that from an economical standpoint the difference in cost of installation between a 4-in. and 3-in. soil-pipe to the owner is of very little significance when compared with its objectionable features.

Floor Connections for Water-Closets and Slop-Sinks.

By J. J. Cosgrove, Philadelphia.

Mr. Cosgrove's paper gave a thorough description of many types of floor connections for water-closets and slop-sinks. It was well illustrated and dwelt at length upon the screw-flange connection, the push-nipple and tapered-joint connection, the union-coupling connection, the ball-joint adjustable closet-flange and the flexible connection. It suggested that "it would seem that the time had arrived when it is necessary for those interested in plumbing practice, to take a firm stand for the adoption of flexible metal-to-metal waste-connections for all water-closets and slop-sinks. Of course, such a stand will meet with a certain amount of opposition, for we all dislike to be legislated into doing things, even for our own good," was his conclusion.

Relationship of the Plumber and the City Engineer.

By Abram Swan, Jr., Trenton, N. J.

Mr. Swan, as city engineer of Trenton, urged in his address the necessity of a "Get Together" policy for plumbers and city engineers. Both of them were responsible as sanitary guardians of the public and harmony between them was essential to the highest efficiency of their respective departments.

Application of the Cleveland Plumbing Code.

By H. J. Luff, Cleveland, O.

This was delivered in the form of an illustrated lecture, Mr. Luff pointing out with marked skill the noteworthy features of the practical application of the Cleveland plumbing code.

Report of the Committee on Tests.

The Committee on Tests submitted the following report:

The consensus of opinion of your committee on tests is that in order to intelligently carry out the wishes of the society, we should start at the very beginning, and obtain data from which definite deductions can be made as to the natural, and not artificial, requirements for piping-system design so that we may be able to recommend a standard that will combine the greatest simplicity with absolute security.

In carrying out this policy we suggest that there be created conditions as nearly as possible like those that obtain in practice, using a single 4-in. soil stack which is the nucleus of all plumbing installations. We have had erected a test stack with various outlets and connections as shown on the drawing. Certain portions of the stack as indicated should be transparent, but the committee have not been able to accomplish this in the present stack.

We recommend that a series of experiments be made on this or a similar stack, using various combinations of the fixtures shown together with open discharge, with both closed and vented running-trap interposed, and with various lengths of horizontal soil-pipe extensions at bottom. Tests to be made with this horizontal line both partially and wholly obstructed to simulate different degrees of back pressure from storm water. The various outlets "a", "b", "c", "d", "e", "f", to have combinations of hydrometers graded in inches and tenths, from which readings can be taken during the duration of the flow, which will show period and intensity of both pressure and partial vacuum. Extensions may be made with iron-pipe and fittings to various horizontal distances from the lettered openings so as to indicate what differences (if any) appear in the results.

In addition to the fixtures in place, other small fixtures could be set and actual results noted to corroborate the results indicated by the series of tests above outlined.

Respectfully submitted,

A. R. McGonegal, chairman; C. A. Bradbury, E. F. Kane, Thos. N. Thomson, J. J. Cosgrove, Committee on Tests.

Resolution Creating Henry B. Davis Honorary Member.

Whereas, An invaluable service was rendered to all plumbing inspectors and sanitary engineers, when through the indefatigable efforts of Henry B. Davis the American Society of Inspectors of Plumbing and Sanitary Engineers was founded, and

Whereas, Through his continued persistent and courageous selfsacrificing labors he brought the society to a firm establishment, and

Whereas, During his successive terms as the president of this body he advanced the standing of the entire membership, be it hereby

Resolved, That the American Society of Inspectors of Plumbing and Sanitary Engineers, bestow upon Henry B. Davis honorary membership, and be it further

Resolved, That in view of his distinguished services this honorary membership carry with it all the rights and privileges of any other member, except the payment of dues.

(Signed) J. J. Cosgrove, Frank K. Chew.

The leading Trenton potters and manufacturers, as already stated, united in extending hospitalities to the conventionists. This in itself would have seemed to have been enough, but they determined to go one better, and each delegate received a package containing the united souvenirs of good will from the Trenton hosts. These included miniature baths, water closets, a paper knife, a nickelled match holder and a diary. In addition to this, a further supply awaited them at the banquet, when each guest received a three-handled drinking mug. It certainly seemed to be the desire of the hosts to send each delegate home "loaded."

The Banquet.

The Committee of Arrangements—E. C. Stover, chairman; A. M. Maddock, Jr., C. A. Metzger, W. B. Maddock and F. W. Bamford—excelled itself in the handling of the banquet appointments. The menu was a happy mixture of "plumb" foolishness and epicurean toothsomeness. It's worth reading.

Menu

Globe (Bi) Valves
Siphon Action Demonstration
Plumbers' Sundries
Grade Journal Cod Dressing a la Heatherton
with Pipe Dope and Rosin
Fowl (Air) Patties
Miniature French China Floats
Frozen Vitreous Slip

Hard Fired Body
with New Oakum en creme, Sweet (Spuds) Braised
Tesselated Lead Glaze Spar Gravy
Snow Ball a la C. B.
Roquefort Putty Syclo Label
Acid
Nails Blow Torches

With the ascension of post-prandial smoker came the fire of gastronomically-induced eloquence. This was controlled in an effective way by James Heatherton, New York City, the able toastmaster. Chas. B. Ball, the retiring president, led the speakers with a pointed discourse on the need of better representation from cities in the United States at their annual meetings. He lauded most justifiably the generous hospitality of the Trenton hosts.

J. J. Cosgrove, Philadelphia, Pa., Dr. A. S. Fell, Trenton, N. J., J. Campbell, Trenton, N. J., W. G. Williamson, Detroit, Mich. (the newly elected president), A. C. Shaver, Pasadena, Cal., F. K. Chew, New York City, and H. de Joannis, Chicago, were contributors to the evening's program.

Thos. B. Holmes, editor of the State Gazette, made a humerous democratic speech leading to republican indorsement, which was much appreciated.

Francis B. Lee, Trenton Health Board, received the lion's share of approbation by virtue of his single, solid and succulent entrenchment behind a rampart of the fair sex. To Mr. Lee had been entrusted their care during the convention and nobly had he performed his task. A theater party, a lunch at the Country Club, a stroll through the historic parts of Trenton, a visit to the pottery showrooms and a table at the banquet were the chief acts of his patronage. Happy ladies and lucky man! The ladies at the table were: Mrs. Charles B. Ball, Chicago; Mrs. Philip Mueller, Decatur, Ill.; Mrs. E. L. Taylor, Poughkeepsie, N. Y.; Mrs. C. R. Bradbury, Washington, D. C.; Mrs. H. J. Luff, Cleveland, O.; Mrs. Geo. Feister, Trenton, N. J.; Mrs. H. C. Blunck, Trenton, N. J.; Mrs. Walter Potter, Mobile, Ala.

Mr. Lee terminated his duties to both sexes with a witty banquet speech, referring to the "lordly plumbers" as being engaged in the "uplift and downhaul" of the nation.

Convention Trade Notes.

The Victor Flange Co., 594 South Park Ave., Buffalo, N. Y., was represented by J. S. Cande. This flange is made of a heavy brass casting and its washer is of asbestos cloth, graphite-treated. The makers claim for the "Victor" flange an absolutely tight water and gas joint, that it can be used on any make of bowl, can be tightened without any pressure on the flange of the bowl and tightened if the floor or pipe is not perfectly straight.

The Blake Specialty Co., Rock Island, Ill., was heralded by literature eulogistic of the Blake clean-out covers, drum-traps and screws, etc.

Daniel Hunsberger, Royersford, Pa., manufactures a wall hydrant, the merits of which were explained by the small leaflets effectively distributed throughout the exhibit room. Hunsberger says "it can't freeze up."

The I X L Pump & Mfg. Co. distributed catalogs of its plumbing and trade supplies with a range from air compressors to valves. The catalog is well illustrated and the descriptive matter is clear. Copies of these can be obtained by application.

John Maddock & Sons and Thos. Maddock Sons Co., Trenton, N. J., handed out picture cards of a new flange designed for the world's betterment. If you did not hear the speech they made at the time you can get full information by writing.

George W. Fleming, Pittsburg Gage & Supply Co., Pittsburg, Pa., was distinctly on the job from start to finish and gave gospel lectures every five minutes on the Pittsburg screw-operated ball cock and made many converts.

Haines, Jones & Cadbury Co., makers of plumbing supplies, 1130-1144 Ridge Ave., Philadelphia, Pa., distributed a handsome catalog in royal blue cover, which seemed to run up and down the whole gamut of plumbing supplies. The catalog should prove to be a salesman by itself on account of its handsome appearance.

Cochran, Drugan & Co., Trenton, N. J., distributed literature showing an improved closet washout.

The Bullard Specialty Co., Tiffin, O., advocated adjustable roof flanges and these were deemed worthy of notice by the conventionists. The flange consists of two iron or copper balls, a flange apron and a lead collar. The collar that encircles the flange at the top is for calking.

A. A. Dumond, 640 West 19th St., New York City, distributed a leaflet slogan entitled "Smoke Without Fire," and hired a colored assistant to make a demonstration. Mr. Dumond is absolutely wrong. It is quite true that the assistant made plenty of smoke, but if he had been ours it would have been accompanied by "fire" at critical moments when everybody coughed and sneezed. Still one could not help acknowledging that Mr. Dumond's apparatus performed the work that it was designed to do. It is an ingenious plumbing test apparatus. Full information can be obtained upon application.

The Pittsburgh Brass Mfg. Co., Pittsburg, Pa., invested its representative interests in the capable hands of Thomas Ward, the president of the company. Mr. Ward, on arrival, found that there was no water supply set apart for exhibitive purposes. With customary energy he rented a small store close to the auditorium and there installed under working pressure the "Pittsburgh Frost-Proof Closets." Here the representatives of the company held forth to the many inspectors visiting the exhibit. There are many expressions of satisfaction that a first-class closet of this class was in the market to displace the open cesspools that all cities are condemning and trying to do away with.

List of Members Present.

John C. Alford, Chicago, Ill.; Burton J. Ashley, Chicago, Ill.

Chas. B. Ball, Chicago, Ill.; John D. Blake, Rock, Island, Ill.; Clifford R. Bradbury, Washington, D. C.; Geo. W. A. Butler, Erie, Pa.

Isaac B. Carver, Pittsburg, Pa.; Frank K. Chew, New York City; Thos. J. Claffy, Chicago, Ill.; Fred W. Cloutier, Minneapolis, Minn.; Martin J. Conroy, St. Paul, Minn.; J. J. Cosgrove, Scranton, Pa.; Garret W. Cotter, New York City; Orlando B. Craig, Pittsburg, Pa.

Frank Dumond, Rochester, N. Y.

Robt. H. Ellithorpe, Fresno, Cal.

Thos. J. Farrell, San Francisco, Cal.; Geo. W. Feister, Trenton, N. J.; John P. Freeman, St. Joseph, Mo.

Joseph Graham, New York City.

John E. Harbison, Schenectady, N. Y.

Wm. Henry Jennish, Waterloo, Ia.

Edw. F. Kane, Wilmington, Del.; George Klaus, Galveston, Tex.

Thos. M. Landers, Richmond, Va.; Henry Joseph Luff,

Cleveland, O.; I. J. Lawler, Pittsburg, Pa.; A. Larsen, Minneapolis, Minn.

Chas. F. Madden, Green Bay, Wis.; A. M. Maddock, Trenton, N. J.; Philip Mueller, Decatur, Ill.; John E. Mulane, Minneapolis, Minn.

C. S. McCosker, Mobile, Ala.; Alfred R. McGonegal, Washington, D. C.; Chas. M. McHugh, Cedar Rapids, Ia.; Harry W. McVea, Omaha, Neb.

Frank W. O'Neill, Joliet, Ill.

Walter Potter, Mobile, Ala.

Edward Quinn, St. Louis, Mo.

C. A. Rainger, Cleveland, O.

Charles R. Schmidt, Baltimore, Md.; Arthur C. Shaver, Pasadena, Cal.; Thos. H. Stevens, Brooklyn, N. Y.; Geo. R. Stolz, Milwaukee, Wis.

J. W. Watson, Des Moines, Ia.; Wm. G. Williamson, Detroit, Mich.; Henry C. Winterhalter, Bayonne, N. J.; Eugene Willard, Detroit, Mich.

List of New Members.

Active Members.

Frederick H. Baker, Springfield, Ill.; Hamilton K. Beatty, Pittsburg, Pa.

William H. Connors, Lowell, Mass.

George W. Fleming, Pittsburg, Pa.

Nathaniel Richardson Hunter, Dunham, N. C.

John Fowler, Jacksonville, Fla.; John C. Lynch, Omaha, Neb.

Lawrence J. Lawler, Pittsburg, Pa.; Thomas G. Lambert, Pittsburg, Pa.

Thomas F. Payne, Pittsburg, Pa.

Alfred J. Rudolph, Philadelphia, Pa.; C. A. Rainger, Cleveland, O.; William D. Ralph, Glens Falls, N. Y.

Edward C. Stover, Trenton, N. J.; Dr. Joseph C. Saile, Bloomfield, N. J.

William Stokes Turpen, Marshfield, Oregon.

Charles Weelans, Trenton, N. J.

Associate Members.

John Newton Barber, St. Louis, Mo.

A. A. Dumond, New York City; H. de Joannis, Chicago, Ill.

Robert L. Moore, New York City.

John V. Nachant, Buffalo, N. Y.

IOWA MASTER PLUMBERS MEET AT CEDAR RAPIDS.

The Iowa Master Plumbers' Association held its annual meeting at Cedar Rapids, Ia., on January 18, 19 and 20, and it was a grand sucess. The headquarters of the convention was at the Montrose hotel.

The first session opened at 10 o'clock in the morning with every delegate in his seat ready to transact business without delay so that the convention was in full swing directly after President J. F. Garvey had called the delegates to order.

Mayor Miles delivered the address of welcome and he was followed by Joseph Popelka, who responded to the mayor's address and extended the assoication's thanks to his honor.

The business that followed was the appointing of committees by the president and the following gentlemen were appointed:

Auditing committee—W. C. McCarten, Marshalltown, chairman; William Scott, Oelwein; J. R. King, Keokuk.

Committee on credentials—Al Curtis, Dubuque; Louis Kreig, Burlington; W. O. Ette, Keokuk.

Sergeants-at-arms—B. Kubias and J. Miller.

The meeting adjourned at 10:30 to give opportunity to the committees to meet. The afternoon session began at two o'clock, the gist of this being an address by A. Selden Walker, of Orange, N. J., vice-president of the national association. The committees reported, and general prospects for the future were discussed by the delegates.

In the evening a general reception and smoker was held, the evening being made one of enjoyment.

On the morning of the second day of the convention the delegates went on a tour of inspection through the federal building as the guests of Postmaster Haskell. The delegates found the plumbing improved beyond their expectations, and the statement that Cedar Rapids can justly be proud of its federal building was pronounced by every man who went through the postoffice.

At the morning and afternoon sessions which were partly of an executive character several matters of vital importance to the trade were discussed, notably among these the liability measure.

In the afternoon the ladies were entertained at a sleigh-ride party, and in the evening the delegates and their ladies were the guests of the Commercial Club at the Majestic theatre.

At the morning session of the last day of the convention the insurance question was again discussed with the result that the committee having the matter in charge was asked to make its final report. After a brief consultation the committee drafted the following resolution:

Resolved, That this convention of master plumbers of the state of Iowa in convention assembled endorses the contract entered into by our national president, W. D. Nolan, and the Casualty Co. of America whereby an extraordinarily low rate of casualty insurance is extended to our members in blanket form covering all possible and contingent liabilities for the very low rate of seventy-five cents per hundred dollars of pay roll, and we heartily recommend the membership to protect themselves by the use of this insurance. Signed, the committee.

A. Selden Walker, vice-president of the national association, who remained in the city and was present at this session, was called on to make a short speech and give his ideas of the work of the convention. He said that in all his travels he had never attended a better or more enthusiastic convention than the one held in Cedar Rapids. He highly complimented the plumbers on the thoroughness with which they took up the various important matters pertaining to their calling. He stated that it was the first convention that he had attended at which the matter of insurance and better protection was discussed and anything definite done.

As there was no more business to come before the convention the election of officers for the ensuing year was now in order and resulted as follows:

President, J. F. Garvey, Mason City.

Vice-President, Chas. G. Bosch, Burlington.

Treasurer, John F. Gearen, Sioux City.

Secretary, W. B. McCarten, Dubuque.

Organizing State Secretary, W. A. Bruce, Des Moines.

Board of Directors: Robert Knauer, Des Moines; Robert Clayton, Davenport; John F. Gearen, Sioux City; Louis Smid, Cedar Rapids; J. F. Garvey, Mason City; H. B. McCarten, Dubuque; R. A. Ellis, Waterloo; Frank Vollers, Keokuk; C. G. Bosch, Burlington.

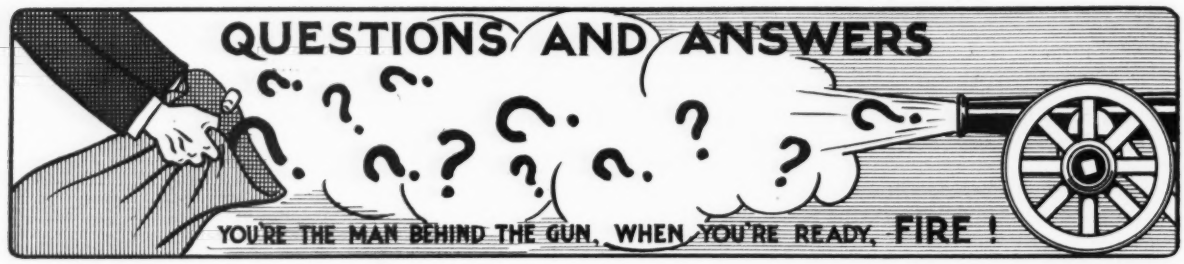
After the election of the board of directors motions and resolutions were made thick and fast. R. A. Ellis in a brief but excellent speech invited the association to meet in convention in 1911 at Waterloo. He set forth many attractive offers. That the convention was to meet in that city seemed to be a fore-ordained fact, for not a single dissenting vote was against it, and Waterloo will entertain the plumbers in 1911.

R. Knauer moved that in view of the fact that they had been so kindly treated by every one in the city expressions of thanks should be placed on the minutes of the convention thanking the people of the city, the newspapers, the local association of plumbers and the Sanitary Club. This motion was seconded and carried.

George McDonnell moved that a special vote of thanks be extended to the vice-president of the national association, A Selden Walker, for his confidence and interest in the Iowa plumbers and for his presence.

The credential committee of the convention which had made its final report on motion had its report accepted and the committee was discharged.

President Garvey then in a brief speech in which he thanked the association for the honor of being its president for the past year, adjourned the convention sine die.



AN UNSATISFACTORY STEAM-HEATING JOB.

Editor "Domestic Engineering:" The enclosed drawing (Fig. 1) should give you a clear idea of a steam-heating job in a bank building which we have never been able to fix so that it will give satisfactory service. The returns were dry and seemed to have plenty fall. We have now taken this job out and intend to put in another. We will have 23 in. between the water-line in the boiler and the cellar floor. Would you recommend a dry or a wet return? What would you consider the right size of the main? We expect to add 60 sq. ft. of radiation in another room upstairs. The old-style boiler which we removed was installed by an out-of-town party, and the up-to-date boiler which we have ordered is a round boiler with a capacity of 800 sq. ft. Any information you can give us will be highly appreciated. S. D.

Burlington, Ia.

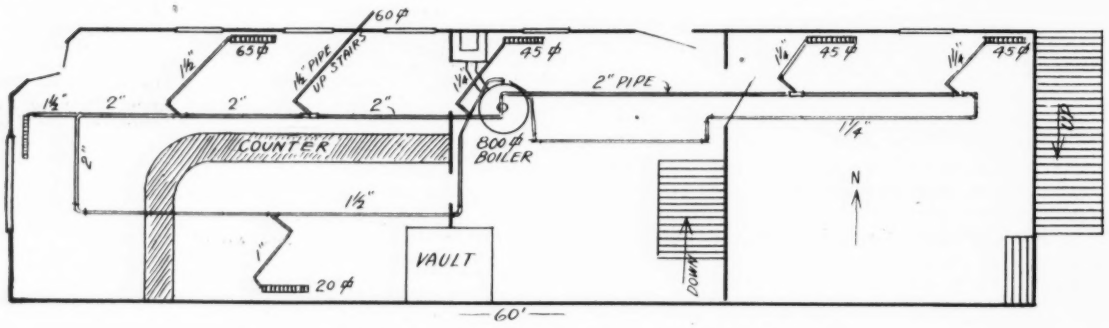


Fig. 1. Sketch of Unsatisfactory Steam-Heating Job in Bank Building.

You will find much interesting reading about pitch of pipes, how to account for it, etc., in "Questions and Answers" for the past four months; also several practical articles along this very line by "Phoenix" and Chas. B. Starkey. If I were putting in this job I would use wet returns and the sizes you have indicated seem sufficient. I would use two main steam lines as you have done in the plan, and I would start high at the boiler, being sure that the far end of each steam main was at least 14 in. above the water line. On the west run I would carry a 2½-in. pipe to the point where the 60 ft. of radiation is taken off for the room upstairs. I see you are wise in putting this on a 1½-in. riser. Beyond this point I would run the main 2 in. in size. The 2-in. main on the east side should carry the radiation marked all right.

Ream all the pipes, secure a fall of at least one-half in. in ten feet, and I think you will have a very easy and a satisfactory working job. One point more, do not reduce the west main below 2 in. until you have taken off the 60-ft. radiator.

DOES CEMENT EXPAND?

Editor "Domestic Engineering:" Will you tell us through the columns of your paper if there is expansion and contraction in cement? We installed in a job of five low-down closets some time since and as the toilet-rooms had granolithic floors we set the bowls in a bed of cement. Some time after all the bowls cracked in the rim at the screw holes. Any information on the subject will be considered valuable to us. D.

Detroit, Mich.

We have no reliable data at hand regarding cement, and so in answering this question shall have to handle it from our own observation and experience. Any one walking along a string of cement sidewalks will notice that between each square is placed a substance which keeps the squares from touching each other. Notice also that whenever the squares are very large they eventually crack. This would seem to show that there is some expansion in cement. We could not state that in the case given by our friend the cement expanded, but perhaps there was no room for expansion, how about that? It seems to us that the bowls might expand a bit, and if they were held down too tight possibly that was the cause. Why not provide for expansion by placing a strip of rubber between the bowl and the cement and then fasten down? We should be glad to hear from any of our readers in relation to this subject.

CAN STEAM EXPAND PIPE OR FITTINGS PERMANENTLY?

Editor "Domestic Engineering:" Will you tell me in an early issue of your paper if it is possible for steam to expand either cast or wrought iron-pipe or fittings to such an extent that they never resume their original dimensions?

Rochester, N. Y. Z. Y.

We noticed a statement somewhere that a large fitting was removed from a steam line in a power plant. This fitting had been in service for three or four years subject to a pressure something above 150 pounds of steam.

The fitting was found to have grown in size and was nearly an inch larger in diameter and nearly three-quarters of an inch longer. It is stated that on the outside were many fine cracks, some of which had begun to leak. If any one who reads this has any definite instances along this line for which he can vouch, we should be glad to be informed.

WHY DOES THIS COIL REVERSE?

Editor "Domestic Engineering:" Please find enclosed a rough sketch of a furnace and gas-range connection to a range-boiler. (See Fig. 2.) There is no trouble with the heating. We have plenty of hot water, but once in a while the circulation reverses and heats through the cold water-pipe to furnace coil. It did this three or four times last winter and once so far this winter, and the last time it has stayed so for two days. Can you or any of your readers explain this peculiar action of this layout?

Denver, Colo. Westerner.

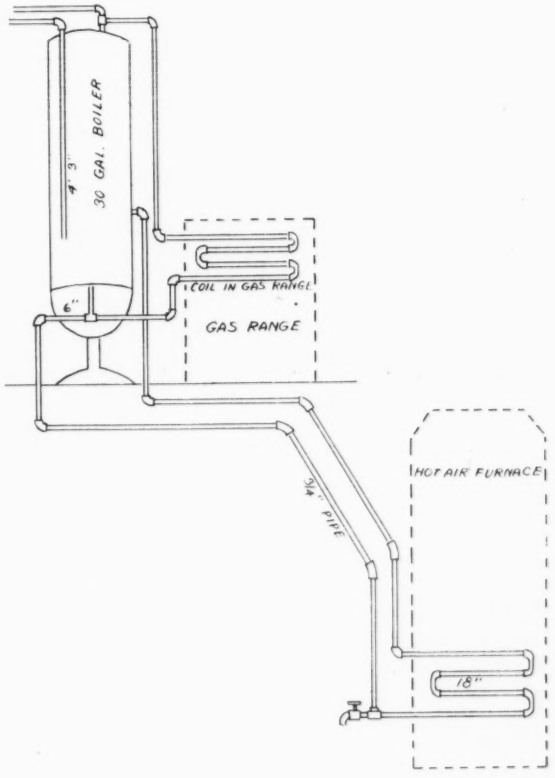


Fig. 2. Showing Range-Boiler Connected to Furnace and Gas-Range.

Now here is a neat problem for some of the many readers of this particular department to ponder upon, and we publish the drawing, as given and would ask some of the students to give us the benefit of their experience. There are several, the writer of these lines happens to be acquainted with that can give a mighty good reply, so be it they take the time. Let us hear from a few.

TOO MUCH HEAT UPSTAIRS.

Editor "Domestic Engineering:" Some time ago I placed heat in the third story of my house. It was a hot-water system and the water was taken from the street heating system which furnishes heat for quite a large portion of our city. When the fitter ran the lines to the third story he cut in on the original lines and ran the pipes to the third story the same size as were the pipes to the radiators in the first story. When the extreme cold weather came on, we could not heat the rooms on the first story warm enough. The winter before they were comfortable, but now they did not get warm enough to be satisfactory, while the rooms in the attic or third story were piping hot.

What to do I did not know. We called up the manager of the plant, but did not seem to get much satisfaction, for the job worked no better after his visit. Finally we called a friend who had had considerable experience, and the first thing he said was, "Why the third story is robbing the heat from the rest of the job. The pipes are too large; they should have been run at least one size smaller and two sizes would have been better. Let's see what we can do," remarked this friend.

So he went over the job and found that on all the third story radiators steam-valves had been used instead of the regular hot-water valve. So he went around to every radiator on the third story and closed these valves down almost tight, allowing only a small amount of water to pass through, thus, in effect, reducing the size of the pipe leading to the radiator and while not cutting down the temperature of the water which went through the third story radiator, this did limit the amount having a larger amount free to circulate in the second and third stories of the house.

He regulated certain radiators likewise in the second story, and while there about three hours he raised the temperature of the rooms in the first story two degrees, and meanwhile the mercury had fallen one degree outside. Now this is what I call the exercise of common sense, for he proved his case on the spot. There was no fire to poke up and regulate, the water being taken, as first stated, from the mains in the street. He turned the valves on at the cellar-wall full head and regulated matters at the radiators. I wish you would publish this for the benefit of others who may be in trouble. Michigan.

AN INDIRECT FAILS TO GIVE SATISFACTION.

Editor "Domestic Engineering": Last fall I had a heating job placed in my residence and several of the rooms down stairs in the coldest weather have failed to heat properly. Is there no way of regulating the amount of air passing over these radiators. I chanced to see one of your papers and thought that perhaps you would kindly answer this question, although I do not run a shop. J. S.

Your question shows that one of two things is the cause of the cold temperature in your rooms (provided you have a sufficient amount of steam to fill the radiators for a reasonable length of time). Either a lack of radiation or else there were no dampers in the cold air boxes leading to the indirect radiators.

You can test the matter on the next cold day by covering up, say at least one-half of the intake to these flues and watch the results. If the house is then warm enough, the trouble is that you have no dampers. If the rooms are still too cold you probably have not radiation enough for the extreme cold weather. Not having a plan and the amount of radiation we are unable to state matters more definitely.

The Sixteenth Annual Meeting of the American Society of Heating and Ventilating Engineers

Held January 18, 19 and 20, 1910, in New York City

The sixteenth annual meeting of the American Society of Heating and Ventilating Engineers was held in the Engineering Societies Building, 29 West 39th St., New York City, on January 18, 19 and 20, 1910. The sessions commenced on Tuesday afternoon at two o'clock, and after the reading of the minutes of the previous meeting, the president, Walter G. Snow, who had charge of the proceedings, gave to the convention his address.

President's Address.

This the 16th annual meeting of the of the A. S. H. & V. E. will differ materially from others in that most of our time will be devoted to the hearing and discussion of committee reports.

Our former president in his address a year ago outlined a plan for making this a review meeting. Based on his recommendation and the vote of the society, committees were appointed covering a wide variety of subjects to review our proceedings and prepare a digest of what has appeared in papers and discussions bearing on those subjects.

The reports of these committees will show us not only what has been done by the society, but will bring to our attention the branches that need developing so that we shall be able to intelligently lay out a course of work for which a demand may have been shown to exist.

Aside from the Review committees, we have a new one called the Publicity committee with its central committee of three and its subsidiary members in many of the states.

It has been felt that the work and aims of this society have not received as prominent mention in other than the engineering and trade press as should be the case. It is hoped that this committee will devise ways and that the society will provide means whereby this apparent deficiency will be overcome.

It is important not only to us as members of this society that its work should have the broadest possible publicity, but it is equally, if not more, important to the public that the facts brought out at our meetings in reference to methods of heating and ventilation should have the desired dissemination.

A number of resignations have taken place during the year, but many new members have been admitted so that a net gain in membership of approximately five per cent has been recorded.

Our committee on Compulsory Legislation has been active in securing data from the various states and is pushing this important work.

The committee on which perhaps the most work has developed is the one engaged in devising a method for rating boilers. This is a broad subject and one which requires careful study.

This committee, which is practically a union of two committees, has been engaged in this work for months, a tentative report was presented at the Summer meeting; further investigation of the subject has been made since that time and the report to be presented at this meeting will merit the most careful consideration and the fullest discussion on the part of our members.

The knowledge that so many committee reports were to be presented at this meeting has probably deterred members from preparing and submitting original papers.

A perusal of our records shows that during the fifteen years 143 papers have been presented before this society, an average of fewer than 10 papers per year. Of these 143 papers 74, or more than one-half, have been presented by only 12 of our members, the other 69 having been presented by 53 persons, some of whom were non-members. This shows that many of our members have as yet made no contribution, through professional papers, of their knowledge and experience.

A greater number of papers is needed. If too many are presented for it to be practicable to have them read in full at meetings they may be read by abstract as in other societies and published in our proceedings for the benefit of members.

I look upon this organization as a sort of co-operative society. Members have a right to expect to get something out of it; on the other hand, they should also be willing or should consider it their duty to add something to the fund of information which our meetings are intended to bring out.

By original papers, by presenting topics for discussion, by discussing papers and topics presented by others and by working on committees, members should fulfill their obligation to the society and promote its welfare.

I feel that it is wise at this Review meeting to consider whether or not we, as individual members, are doing all we should to advance the welfare and prestige of this society. The professional standard of our meetings is measured to a great extent by the number and character of the papers presented.

Data relating to installations which have proved successful under actual working conditions, descriptions of original methods for accomplishing certain results in heating and ventilation, records of tests, are all of interest and value.

As to tests, one of our standing committees bears that title, yet owing largely to lack of any appropriation to conduct tests, far less has been accomplished than the several heads of that committee have desired.

As our society becomes more prosperous, it seems to me that money could be well spent in this field.

We should keep clearly in mind the objects set forth in our charter. With these objects in view, backed by enthusiasm on the part of members, a large field of useful effort spreads out before us and our achievements will benefit not only our members, but the public at large. To the latter, I feel we owe a duty. The general acceptance of standards as to minimum heating requirements, the rating of heating boilers and the compulsory ventilation of buildings, these and other kindred subjects are of great importance to the public, affording some protection against disappointment and loss from defective or deficient systems of heating and ventilation.

It is of interest to note that one of the objects set forth in our charter is "To establish a clearly defined minimum standard of heating and ventilating for all classes of

buildings." Our constitution makes no mention of' this object.

In considering the adoption by this society of any standard, it is worthy of note that the constitution of one of the larger and older engineering societies states: "The society shall not approve or adopt any standard."

In that society professional committees may be appointed and reports of such committees may be accepted by the society and printed in the Transactions, but shall not be approved or adopted as the action of the society.

I am not aware that our society has adopted any standards. Before doing so I would recommend that the subject in general receive careful consideration.

The growth in membership of this society must be a source of gratification to those having its interests at heart, yet we must bear in mind that it is not so much the numerical strength in membership as the strength of its members individually that counts in the long run in the usefulness of the society to itself and to the public at large.

There are many subjects pertaining to our profession to be investigated, many questions to be solved, much work to be done. If these matters be undertaken with an unselfish spirit, with a desire to add to the general fund of knowledge, we shall see results which will redound to the credit of this society and which will elevate the profession of heating and ventilating engineering.

This was followed by the report of the secretary, Wm. M. Mackay, which is herewith presented.

Secretary's Report.

Your secretary would report an increase in membership during the past year. At the last annual meeting our membership was composed of 2 honorary members, 302 members, 26 associates and 17 juniors, or a total of 347 members of all grades.

During the year we have elected 43 members, 7 associates and 4 juniors.

Seventeen members and 2 juniors were dropped from the roll for non-payment of dues, 1 member and 3 associates failed to qualify, 4 juniors were advanced to full membership, 2 associates were elected to full membership, 4 members and 1 associate resigned and we had two deaths in our ranks: T. J. Waters, a charter member of our society died Feb. 25, 1909, and Max J. Mulhall, who was elected to membership June 25, 1909, died July 30, 1909.

Our present membership is 2 honorary members, 323 members, 27 associates and 15 juniors, or a total of 367 members of all grades, a net increase of 20.

The financial affairs of the society are in a good condition. At the last annual meeting, there was a balance in the treasury of $1,947.95; there has been received from all sources during the year $3,952.14, this with the balance on hand making a total of $5,900.09.

The total expenditures for the year amounted to $4,687.41, leaving a balance in the treasury of $1,212.68.

There is owing to the society from members for dues and proceedings and from newly elected members for initiation fees and dues $1,469.85; this with the balance on hand amounts to $2,682.53.

All bills have been paid except those in connection with this meeting and the secretary's account for January.

The members dropped from the roll during the past year for non-payment of dues, owed the society $445.

One candidate for membership and three for associate membership who were elected during the year failed to qualify. The cost to the society per candidate for printing, postage, etc., is about $3 and your secretary would suggest that a fee of $5 be required with each application to be applied to his initiation fee if elected, or returned to him, if not, as we have a certain number on each ballot who fail to qualify.

The ballot for the proposed amendment to the constitution cost the society over $30 for printing, envelopes, addressing and postage, not including the officers' letter.

The secretary's expenses for the year, including stenographer, clerk hire, post-office box, certificates of membership, expenses in connection with the summer meeting, postage, express, telegraphs, telephones, office rent, etc., amounted to $1,204.45.

The society held a summer meeting at Indianapolis, July 15 and 16, 1909, which was successful in every way.

Volume I of the society's proceedings was reprinted and is now being received from the printer's, the 1908 proceedings have been edited, printed and corrected, some new cuts being required; these have just been received from the engraver's and the volume will be issued and sent to the members as soon after the meeting as possible.

The 1909 directory was delayed first on account of some of the members on the May ballot failing to qualify and second on account of some of the members neglecting to send in their corrected slips, the secretary having to furnish 125 addresses and occupations after waiting six weeks, but the directory has finally been completed and mailed to the members.

The papers and reports for this and the summer meeting were received late, putting the society to an additional expense for night work in connection with printing, but they were completed and sent to the members as far in advance of the meetings as possible, while any errors were caused by lack of time to read proofs.

The secretary has a number of applications for membership on hand which will ensure a ballot being sent out as soon after this meeting as possible.

After the reports of the treasurer and the board of governors, there were presented the reports of committees on compulsory legislation, presented by Bert C. Davis, and the report of the committee on legislation for New York State, presented by Wm. M. Mackay.

Report of the Committee on Compulsory Legislation.

Your Committee on Compulsory Legislation has, during the past year, endeavored to have bills introduced and laws passed in several states relating to the ventilation of public buildings, but on account of the combination of circumstances, have not been able to accomplish a great deal.

In the state of Indiana a bill was introduced and not only passed in Senate but had reached the third reading in the House when it was killed because the father of the bill was in disfavor. Later on the State Board of Health was given power to act in the matters of ventilation of schools, but we are hopeful that some law will be put through during the next legislature in 1911.

An attempt was made to introduce a bill before the Wisconsin State Legislature, but for some reason, which your committee could not learn, it was never brought up for even the first reading. We are told, however, that another attempt will be made to bring the subject up again in 1911, when the next legislature convenes.

In Illinois we were no more successful than in Wisconsin, the principal reason being the senatorial fight which lasted through almost the entire session. The local

state committee report that they are hopeful of such a bill being passed in 1911.

We are pleased to report that a law was passed during the year 1909 in the state of Illinois, the same being:

"AN ACT to provide for the health, safety and comfort of employes in factories, mercantile establishments, mills and work shops in this state and to provide for the enforcement thereof."

Extracts from this bill, which became a law on January 1, 1910, are as follows:

"Sec. 11. In every factory, mercantile establishment, mill or workshop, where one or more persons are employed, adequate measures shall be taken for securing and maintaining a reasonable, and as far as possible, equable temperature, consistent with the reasonable requirements of the manufacturing process. No unnecessary humidity which would jeopardize the health of employes shall be permitted."

"Sec. 12. In every room or apartment of any factory, mercantile establishment, mill or workshop, where one or more persons are employed, at least 500 cu. ft. of air space shall be provided for each and every person employed therein, and fresh air to the amount specified in this act, shall be supplied in such a manner as not to create injurious drafts, nor cause the temperature of any such room or apartment to fall materially below the average temperature maintained: Provided, where lights are used which do not consume oxygen, 250 cu. ft. of air space shall be deemed sufficient. All rooms or apartments of any factory, mercantile establishment, mill or workshop, having at least 2,000 cu. ft. of air space for each and every person employed in each room or apartment, and having outside windows and doors whose area is at least one-eighth of the total floor area, shall not be required to have artificial means of ventilation; but all such rooms or apartments shall be thoroughly aired before beginning work for the day and during the meal hours. All such rooms, or apartments, having less than 2,000 cu. ft. of air space, but more than 500 cu. ft. of air space, for each and every person employed therein, and which have outside windows and doors whose area is at least one-eighth of the floor area, shall be provided with artificial means of ventilation, which shall be in operation when the outside temperature requires the windows to be kept closed, and which shall supply during each working hour at least 1,500 cu. ft. of fresh air for each and every person employed therein. All such rooms or apartments having less than 500 cu. ft. of air space for each and every person employed therein, and in which the outside window and door area is less than one-eighth of the floor area, shall be provided with artificial means of ventilation, which will supply during each working hour throughout the year, at least 1,800 cu. ft. of fresh air for each and every person employed therein: Provided, that the provisions of the preceding portions of this section shall not apply to storage rooms or vaults: And, provided, further, that the preceding portions of this section shall not apply to these rooms or apartments in which, manufacturing processes are carried on which from their peculiar nature would be materially interfered with by the provisions of this section. No part of the fresh air supply required by this section shall be taken from any cellar or basement."

"The following terms of this section shall be interpreted to mean: The air space available for each person is the total interior volume of a room, expressed in cu. ft., without any deductions for machinery contained therein, divided by the average number of persons employed therein."

"Outside windows and doors are those connecting directly with the outside air; the window and door area is the total area of the windows and doors of all outside openings; and the floor area is the total floor area of each room."

"Sec. 29. The provisions of this act relating to sanitation and ventilation shall not be held to apply to such rooms or apartments of any factory, mercantile establishment, mill or workshop, which are being operated under the supervision of the federal government, by virtue of an Act of Congress entitled, 'An Act making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1907,' approved June 30, 1906, or any amendment thereof; nor shall any other of the provisions of this act so apply respecting matters and conditions over which the federal government now exercises or shall hereafter exercise jurisdiction."

Your attention is also called to the fact that the law provides that "anyone who shall violate any of the provisions of this act shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished for the first offense by a fine of not less than $10 and not more than $50, and upon conviction of the second or subsequent offense shall be fined not less than $25 and not more than $200, and in each case shall stand committed until such fines or costs are paid, unless otherwise discharged by due process of law."

A bill prepared by a member of your committee was presented at the last Michigan State Legislature, but it came up so late that other matters before the House prevented any action being taken. When the legislature meets again it should be the object of the Committee on Compulsory Legislation to see that this bill is brought before the House early enough so that it will be taken up in order and at a time when the legislature will have an opportunity to give it the consideration it deserves. In fact, what has just been said should apply to all bills which are still pending in the several states.

We are pleased to state that under date of Sept. 20, 1909, the State Board of Health of Vermont promulgated regulations covering among other things the heating and ventilation of school houses, hospitals and other public buildings. They are as follows:

"(A) The heating apparatus must be of sufficient capacity to warm all rooms to 70° Fahr. in any weather.

"(B) With the rooms at 70°, a difference of not less than 40° between the temperature of the outside air and that of the air entering the room at the warm air inlet, the apparatus must supply at least 30 cu. ft. of air per minute for each person accommodated in the rooms.

"(C) Such supply of air should so circulate in the rooms that no uncomfortable draft will be felt, and that the difference in temperature between any two points on the breathing plane in the occupied portion of the room will not exceed 3°.

"d. Vitiated air in amount equal to the supply from the inlets should be removed through the vent ducts.

"3. The closets and fixtures must be so arranged and ventilated that no odors therefrom shall be perceived in any portion of the building."

"To secure the approval of the state or local health officials of plans showing methods or systems of heating and ventilation, the afore-mentioned requirements must be guaranteed in the specifications accompanying the plans. In school houses, hospitals and other institutions the number of occupants intended for each room should

be given, and in places of assemblage the arrangement of seats and aisles be shown on plans."

"As 40 pupils are as large a number as one teacher can well instruct, the rooms, it is specified, shall be 32 x 28 x 12 ft. high, giving from 200 to 300 cu. ft. of air space and 20 sq. ft. of surface area for each pupil."

"The windows must be numerous, large enough, and so arranged as to give ample light to every part and corner of the room. The window space should be one-fourth of the floor space, and must be not less than one-fifth. There must be no more space between the top of the window and the ceiling than is required to finish the building, and the window sill must be 4 ft. from the floor."

The compulsory character of the regulations is indicated from the following extracts from the public statutes of Vermont:

Definition of Public Buildings.

"Section 5412. The words 'public buildings,' as used in this chapter, shall mean churches, school buildings, hotels more than two stories high and places of amusement, more than one story high, and buildings, factories, mills or workshops more than two stories high in which persons are employed above the second story."

"Section 5416. Said board shall, when necessary, issue to local boards of health its regulations as to the lighting, heating and ventilation of school houses, and shall cause sanitary inspection to be made of churches, school houses and places of public resort, and make such regulations for the safety of persons attending the same as said board deems necessary. Public buildings now standing or hereafter erected shall conform to the regulations of said board in respect to sanitary conditions and fire escapes for the public health and for the safety of individuals in such public buildings."

"A person, corporation or committee intending to erect a public building shall submit plans thereof showing the method of heating, plumbing, ventilation and sanitary arrangements to said board, and procure its approval thereof, before erecting such building."

Penalty for Failure to Ventilate.

"Sec. 5417. A person, corporation or committee which erects a public building without the approval and without complying with the regulations of the State Board of Health as provided for in the preceding section, shall be fined not more than $500 nor less than $100, and shall make such building to conform to the regulations of said board before the same is used, otherwise such building shall be deemed a nuisance, and shall be put in proper condition by the local health office under direction of said board at the expense of the owner."

Sanitary Administration of School Houses.

The regulations, in addition to architectural features include the following partial list:

"1. Dusting with damp cloth. Sweeping with damp broom.

"2. Slates, slate pencils and sponges should not be used in the school room. In place of these, each pupil, according to requirements, should be supplied with paper, pencil or pen and penholder. These should be kept in a box marked with the pupil's name, and never transferred from one pupil to another.

"3. Each pupil should be provided with a drinking cup marked with the pupil's name, and this kept on a hook or nail over the pail or faucet.

"4. School rooms should be swept and dusted after school hours. No dust should be stirred up before school in the morning. Teachers should know that dust and germ life are identical."

Your committee understands that a special report is to be made by one of its members relative to the work done by previous Committees on Compulsory Legislation and these two statements taken together should be considered as a complete report on the subject.

Respectfully submitted:

Committee on Compulsory Legislation.

John F. Hale, chairman; George Mehring, H. D. Crane, Bert C. Davis, Fred R. Still.

Report of Committee on Legislation for New York State.

Your committee has little to report in the way of anything actually accomplished other than the ascertainment of certain facts and conditions.

The facts regarding loft ventilation are about as follows:

The law now in force requires that a certain amount of ventilation be provided, but does not designate just what is necessary to fulfill it. The enforcement of that law, and the determination of the actual requirements in each case to fulfill it, rest with one man. It is exceedingly difficult for him alone and unaided to accomplish the desired results.

The individual owner appears to be willing to conform to the requirements, but the large owners, real-estate operators and corporations, rather prefer to fight, claiming that a one-man interpretation of a law is not apt to be a lasting one, and that every change in the office would bring a different interpretation. They even go so far as to insinuate, if not openly charge, bad faith.

It appears that there are many prominent people and bodies of people outside the society who would be glad to co-operate in a united movement to get such legislation or would compel proper ventilation and would definitely state what that ventilation should consist of under different conditions.

It appears that through the Federation of Labor, the unions themselves could be enlisted in the cause to better their own conditions.

This committee, therefore recommends that a committee of three men be appointed with power to draft a bill for presentation to the legislature within one month, and that the committee shall invite any and all persons and bodies outside the society to co-operate and lend the weight of their influence to get the bill passed this year.

The bill should designate the necessary degree of ventilation; and require that the system installed be a ventilation system in fact as well as in name. It should prohibit such installation as can be made inoperative as soon as the inspector's back is turned, as well as those wherein the ventilation is attempted by means of untempered air. A cold, draft ventilation should be prohibited.

The report is signed by: Burt S. Harrison, Frank K. Chew, W. M. Mackay.

A very interesting report was that of S. R. Lewis, Chicago, who reported the Illinois Chapter.

The sessions occupied the afternoon and evening of January 18th, the afternoon of January 19th, and the morning and afternoon of January 20th. The evening of January 19th was devoted to the annual reception and dinner of the society. Headquarters of the convention were in the New Grand Hotel, 31st and Broadway, and

prior to the banquet there was a general reception of members, their ladies and guests, from 6 to 7:30 p. m.

On the evening of January 18th the result of the election of officers was announced as follows:

President, J. D. Hoffman, Purdue University, Lafayette, Ind.; first vice-president, R. P. Bolton, New York City; second vice-president, S. R. Lewis, Chicago, Ill.; secretary, Wm. M. Mackay, New York City; treasurer, U. G. Scollay, Brooklyn, N. Y.

Board of Governors—Prof. R. C. Carpenter, Ithica, N. Y.; Jas. Mackay, Chicago, Ill.; J. A. Goodrich, New York City; J. F. Hale, Chicago, Ill.; G. W. Barr, Philadelphia, Pa.

The work of the society is constantly increasing in its scope as abundantly evidenced by the variety of topics on which the reports, papers, and discussions were centered. The most important of these, we present in synopsis.

Report of Committee on Standards with Reference to House-Heating Boiler Ratings.

This report is an endeavor to secure an equable rating of cast-iron house-heating boilers, based upon the area of grate surface and the coal burned per hour per square foot of grate surface. After enumerating the conditions which had been assumed as a basis for the test, the committee presented a table of ratings and recommended that it should be adopted and used by the members of the society for rating purposes.

Furthermore, the committee recommended the appointment of a special committee on boiler ratings to consider all questions arising from the adoption and confirmation of such table of ratings. The report concluded, with a list of 32 items that have to be considered in the making of such tests. This report was submitted by J. H. Kinealy, chairman; John R. Allen, W. L. Bronaugh, Albert B. Franklin, Wm. M. Mackay, and A. J. Smith.

The discussion on this gave promise of some interest when there was introduced into the arena a minority report issued by P. H. Seward. Without criticizing the former report, the minority report introduced a new basis of rating on coal consumed per square foot of grate surface and efficiency. It divided the boilers into four classes, fixed the firing period for each class, and also the maximum coal consumption during each firing period. This minority report received a number of supporters. In reality there were three minority reports, for immediately after the minority report, a letter of criticism from Edward D. Densmore and an expression of opinion from Walter G. Snow, the president of the society, were presented. The center of interest, however, was the report of Mr. Seward, and after considerable discussion it was decided to accept all reports and submit them to the consideration of a special committee on the topic under discussion.

Report on Heating Boilers.

This report presents a list of the papers and topics inspired by the association's meeting and a subject index covering general design, volume of water-heating, surface proportions, rate of heat transmitted, heating surface as related to grate surface, internal circulation, circulation of gases, combustion, rate of combustion, firing periods, chimney and smoke outlets, operating efficiency, capacity as relating to rating, methods of rating, test methods and suggestions, radiator efficiency as affecting ratings, value of standards, boiler joints, cast iron vs. steel and fire-pot construction.

The Method of Determining the Sizes of the Pipes of a Hot-Water Apparatus.

This paper was a contribution by J. Jeffreys, London, Eng., a member of the society. It was extensive in its treatment and was accompanied by a chart of a gravity hot-water apparatus, illustrating a method of estimating the sizes of pipes therefor. 'Tis to be remembered that European conditions are not the same as the American ones, but, nevertheless, for purposes of comparison this paper, which will be reproduced in a later issue, will be of much interest.

Report for Hot-Water Heating.

This was practically an index for all the papers and topics presented by the society for the past fifteen years on this subject, and should be valuable for this purpose to all members of the organization and should also serve as an incentive for those interested in the matter to become members of the society.

Report on Steam Heating for Residences and Small Building.

This was an index of subject-matter as appearing in transactions of the society, concluding with an expression of opinion by the committee that low-pressure steam-heating is not as generally used or advocated for the heating of residences and small buildings, as hot-water is. The advantages and disadvantages of the steam method of heating are treated, the conclusion of the committee being that some of the later systems of low-pressure steam combined with the vacuum system, overcome most of the disadvantages of low-pressure steam systems for this class of buildings.

Report on Furnace-Heating.

This was a report of considerable interest and was a most carefully compiled review of the treatment of the subject during the past fifteen years by the society. It was not only an index, but here was presented to the conventionists logic discussions from the committee's point of view on all opinions previously presented with due regard to their being borne out by reports on tests. The furnace, fresh-air duct, leaders and flues, registers and heat losses in buildings were in turn considered. The report concluded with a review of the different subjects and topics in each volume and is undoubtedly a valuable contribution to the society's literature.

Performance of Heating Guarantees.

This was presented by William Kent and is a consideration of formulae for determining to what temperature room should be heated when the outside temperature is above zero, in order to prove the performance of a guarantee that the heating apparatus will heat the room to 70 degrees when the outside temperature is zero or other specified low temperature. The object of the author of the paper is to submit a formula which is recommended on account of its simplicity and its general correctness.

Report on Tests.

This is a review of the tests recorded by the society since 1895. It is published not only for its index value, but also for its suggestive value so its members will be able to refer to it when considering methods of testing. The report expresses the appreciation of the services of Professor Carpenter for the many valuable papers on tests submitted by him.

Variability of Interior Conditions in School Rooms. By W. H. Whitten.

This was a most instructive presentation in that it reflected the fact that nobody knows anything about the subject.. Mr.

Whitten presented a table compiled from inspectors' reports on Massachusetts, showing remarkable differences in interior conditions with apparently similar volumes of supply and degrees of temperature. These tests were made at various times during the past eight years and Mr. Whitten aroused much interest, which led to discussion by members of the society and opened up to everyone who is interested in this subject, a fresh avenue of investigative exploitation. Without doubt, Mr. Whitten's paper will lead to the presentation of future papers on this subject at the following conventions.

Report on Air-Washers.

This was a very carefully compiled report by the committee, whose chairman was S. R. Lewis, Chicago. It deals with the important topic of purification of air, enumerating the different types of cleaners utilized for this purpose and included suggestions by a prominent engineer for the improvement of water types of air-cleaners. The paper pointed out the value of the use of water cleaners in securing humidity control. It concluded with a suggestive form of guarantee for air-washer specifications.

List of Members.

Homer Addams, Philadelphia, Pa.; C. P. Atwood, Salem, Mass.; J. S. Anderson, New York City; A. S. Armagnac, New York City.

Oliver L. Badger, New York City; George W. Barr, Philadelphia, Pa.; Hugh J. Barron, New York City; Thomas Barwick, New York City; Edward S. Berry, Philadelphia, Pa.; J. J. Blackmore, New York City; R. P. Bolton, New York City; Davis S. Boyden, Boston, Mass.; H. C. Bushnell, New York City; F. W. Burdid, New York City; W. J. Baldwin, New York City; W. J. Baldwin, Jr., Brooklyn, N. Y.; John Black, Trenton, N. J.; S. H. Brooks, New York City; W. A. Birdsall, Newark, N. J.; G. W. Byne, New York City; J. B. Bernhard, New York City; S. R. Beach, Long Island, N. Y.

Rolla C. Carpenter, Ithaca, N. Y.; B. H. Carpenter, Wilkesbarre, Pa.; Albert A. Cary, New York City; Frank K. Chew, New York City; Ralph Collamore, Detroit, Mich; A. G. Cripps, Akron, O.; F. Cooper, Boston, Mass.; J. O. Carney, New York City; J. E. Costello, New York City; A. Cone, New York City; Maxwell Q. Cooley, Washington, D. C.; J. W. Curtis, Norwich, Conn.; F. T. Chapman, Montclair, N. Y.; W. K. Chenoweith, Jr., Chicago, Ill.

Bert C. Davis, Kansas City, Mo.; Edward H. Denny, Newark, N. J.; P. C. Doherty, Poughkeepsie, N. Y.; Jas. A. Donnelly, New York City; W. H. Driscoll, Jersey City, N. J.; F. K. Davis, Washington, D. C.; A. A. Dumond, New York City; W. F. Devendorf, Rochester, N. Y.; R. G. Davis, Brooklyn, N. Y.

John G. Eadie, Bayonne, N. J.; A. C. Edgar, Philadelphia, Pa.; W. E. English, Boston, Mass.; J. E. Edwards, Allentown, Pa.; R. M. Ensign, Bridgeport, Conn.

Geo. D. Farnham, New York City; J. C. Faulkner, Newark, N. J.; A. M. Feldman, New York City; J. L. Fitts, Camden, N. J.; F. A. Forgee, New York City; Frank C. Fay, New York City; E. E. Fox, New York City; H. J. Fuller, New York City; Thos. C. Fleming, Philadelphia, Pa.; E. C. Fisk, New York City; Charles A. Fuller, New York City; J. W. Fryer, New York City.

Howard T. Gates, New York City; Judson A. Goodrich, New York City; Geo. V. Greey, Amityville, L. I., N. Y.; J. B. Garfield, New York City; Joseph Graham, New York City; F. Gaskill, Montreal, Que.; J. E. Gray, Providence, R. I.; W. H. Gurney, Paterson, N. J.; G. L. Greenman, New York City.

John F. Hale, Chicago, Ill.; Richard Hankin, New York City; B. S. Harrison, New York City; Andrew Harvey, Detroit, Mich; Joseph G. Hayes, Indianapolis, Ind.; Harry H. Hellerman, Philadelphia, Pa.; George D. Hoffman, Chicago, Ill.; Jas. D. Hoffman, Lafayette, Ind.; H. L. Henrichs, New York City; R. B. Hunt, New York City.

A. Edson Hall, Albany, Pa.; F. B. Howell, New York City; J. Elmer Heg, New York City; R. W. Hillman, New York City; D. W. Haire, New York City; E. J. Hurley, Boston, Mass.; W. M. Hyman, New York City; G. Howard, New York City.

Harry de Joannis, Chicago, Ill.

Samuel Kauffman, St. Louis, Mo.; Albert T. Kellogg, Kewanee, Ill.; William Kent, Montclair, N. J.; Conway Kiewitz, New York City; Dwight D. Kimball, New York City; George W. Knight, Newark, N. J.; T. P. Kelley, New York City; W. P. Kirk, New York City; A. H. Kroepke, New York City; Chas. H. Kissam, Brooklyn, N. Y.; A. A. Kiewitz, New York City.

J. P. Lisk, Brooklyn, N. Y.; E. K. Lanning, Camden, N. J.; W. G. Lecompte, New York City; W. Lawder, New York City; D. T. Lyon, New York City; Henry H. Lee, Worcester, Mass.; J. F. D. Lorme, New York City; R. Lewen, New York City; L. L. Lewis, New York City; J. Irvine Lyle, New York City.

James Mackay, Chicago, Ill.; F. F. MacNichol, Oshkosh, Wis.; Wm. W. Macon, New York City; H. C. Mallory, New York City; Edwin A. May, Chicago, Ill.; Frank G. McCann, New York City; Jas. H. Merritt, New York City; Edw. S. Mobley, Frederick, Md.; Edwards K. Munroe, Baltimore, Md.; S. F. McDonald, Cleveland, O.; Chas. Morrison, Boston, Mass.; Harold McGeorge, Cleveland, O.; J. G. Mills, Worcester, Mass.; W. M. Myrids, Boston, Mass.; W. R. Munro, New York City; Geo. W. Mahaney, New York City; John Mosner, New York City; A. B. Marshall, New York City; W. E. Mason, New York City; Chas. A. Miller, New York City.

Andrew P. Newell, New York City; Frank M. Norton, New York City.

C. W. Old, New York City; A. J. O'Neill, New York City; G. O'Hanlon, New York City; Geo. S. O'Neil, Paterson, N. J.; H. T. Owens, New York City.

Andrew G. Paul, Boston, Mass.; W. B. Pelton, Boston, Mass.; G. Peterson, New York City; F. T. Phillips, Philadelphia, Pa.

D. M. Quay, New York City; C. S. Quay, New York City; L. H. Quackenboss, New York City.

William Ritchie, Jersey City, N. J.; Geo. A. Robertson, Brooklyn, N. Y.; C. H. Robertson, Tientson, China; R. D. Reed, Westfield, Mass.; P. M. Richards, New York City; E. E. Reilly, New York City; J. W. Rowe, Boston, Mass.

John T. Sadler, Elmira, N. Y.; U. G. Scollay, Brooklyn, N. Y.; Chas. E. Scott, New York City; P. H. Seward, New York City; L. B. Sherman, New York City; H. A. Smith, Hartland, N. Y.; Wm. G. Snow, Boston, Mass.; C. B. J. Snyder, New York City; B. F. Stangland, New York City; Frank H. Stevens, Chicago, Ill.; Edward L. Stock, Washington, D. C.; W. R. Stockwell, Irvington-on-Hudson, N. Y.; Chas. D. Symms, Sioux Falls, S. Dak.; C. H. Slaten, New York City; S. C. Smith, Scranton, Pa.; Serginsky, New York City; E. E. Spragge, New York City; D. Stuart, Wilkesbarre, Pa.; J. A. Swain, New York City; H. E. Sherwood, Philadelphia, Pa.; J. A. Sibell, Brooklyn, N. Y.; E. S. Storm, New York City; C. H. Symons, New York City; J. B. Sadler, New York City; F. W. Smith, New York City.

C. Teran, New York City; John H. Textorius, New

The Banquet of the American Society of Heating and Ventilating Engineers, Held at the New Grand Hotel, New York City, on Wednesday Evening, January 19, 1910

York City; M. F. Thomas, New York City; T. N. Thomson, Scranton, Pa.; J. S. Thomson, New York City; Walter Thompson, Elizabeth, N. J.

Wm. C. Vrooman, Schenectady, N. Y.

Warren Webster, Camden, N. J.; Theodore Weinshank, Indianapolis, Ind.; Harry S. Welsh, Rochester, N. Y.; W. H. Whitten, New York City; Herbert W. Whitten, Boston, Mass.; John C. Williams, New York City; H. A. Wilson, Boston, Mass.; Chas. H. Whitney, Elmhurst, Pa.; Lyman D. Wells, New York City; W. G. Williamson, Detroit, Mich.; J. M. Watson, Toronto, Canada.

The Banquet.

The banquet of the society took place on Wednesday evening, January 19th, at the New Grand Hotel. A number of prominent speakers were on the program and the character of the speeches were most interesting.

James D. Hoffman, the president-elect of the society, dwelt on the needs of the organization of assuming responsibility for the nation on engineering subjects and called attention to the essential points of different responsibilities to be assumed by the members of the society, whom he characterized as "elemental units."

James Mackay gave a brief review of the work of the organization since its inception. He stated that its scope should be enlarged, and he emphasized the point that the heating and ventilating professions were as yet in their incipiency and that the work of prolonging life and improving health was one to be justly proud of and sufficient to arouse enthusiasm in those who thoroughly grasped the subject. It was the society's duty to disseminate knowledge.

S. R. Lewis, Chicago, Ill., made a pointed speech on the duties of the membership.

Professor Richards, Washington, D. C., a leader in the industrial, educational movement in the country, in an eloquent address, portrayed the advantages of industrial, educational work, classified the various movements working to that end and requested the co-operative interest of the society in the furtherance of his work.

W. H. Whitten spoke on the duties of new members, stating that new members were fresh material and outlined some of the different lines of work which the new member could take up, in order to further his own usefulness and the work of the organization.

THE SIXTEENTH ANNUAL MEETING OF THE WISCONSIN MASTER PLUMBERS' ASSOCIATION.

The Master Plumbers' Association of Wisconsin held its 16th annual meeting in Sheboygan on Tuesday and Wednesday, January 18th and 19th. The convention was a success in every respect, perfect harmony prevailing throughout all the sessions, and business was dispatched with celerity. The attendance was the largest in the history of the association, the total registration of delegates present being 125.

Among the matters considered at the convention were liability insurance for plumbers protecting all the men in their employ. A resolution was passed sanctioning the action of the National Association of Master Plumbers in promoting and arranging for this insurance. All the plumbers of the association were urged to take up the insurance. The amount of this business given to the liability insurance company determines the rate so that if all go into it all will secure a low premium rate.

The resolutions committee presented a resolution instructing the new executive committee to draft a new constitution and by-laws as the present documents are not in harmony with the constitution and by-laws of the national organization.

Wednesday morning was devoted to a tour of inspection through the plant of J. M. Kohler Sons Co., Riverside, Sheboygan. The visitors expressed surprise at the size and completeness of the plant in which porcelain enameled-iron sanitary ware is made.

In the afternoon the election of officers was held with the following result: President, Geo. F. Reeke, Green Bay; vice-president, Louis Sonntag, Sheboygan; secretary, P. H. Ryan, Appleton; treasurer, Fred E. Green, Janesville; member of board of directors: Jacob Schuh, Milwaukee; delegates to national convention: Louis Sonntag, Sheboygan; and Jacob Schuh, Milwaukee; alternates: P. H. Murphy, Milwaukee; and J. A. Trane, La Crosse.

Though no selection for a convention city for the next state convetion was made, it was stated that in view of the urgent invitation received from Green Bay the meeting will no doubt go to that city. The selection of the convention city will be made at the meeting of the executive committee in February.

A set of resolutions was adopted at the closing session thanking the J. M. Kohler Sons Co. for the courtesy shown the delegates at the tour of inspection of its plant, and congratulating the company on the fine plant and the sanitary equipment for the workmen, especially the individual toilet rooms now in use, a feature which appealed very much to the delegates.

The banquet at the Hotel Foeste on Wednesday evening proved a most enjoyable affair. After the repast an informal session was held, and the various officers, past and present, were called upon for extemporaneous talks. Wm. H. Halsey, of Milwaukee, former president of the National Association of Master Plumbers and at present a member of the national board of directors, was present at the convention and delivered an address on "Organization" at the banquet. Mr. Halsey represented National President Walter D. Nolan, Washington, D. C., who was unable to be present. Other speakers of the evening were W. E. Goodman, of Milwaukee, formerly for many years treasurer of the National Association of Master Plumbers; S. V. Hanley, Hugo Lippert, W. Dusold, I. Toussaint, Al. Voeltz, D. Polacheck and F. Griebl, all of Milwaukee; Fred E. Green, Janesville; J. A. Trane, La Crosse; E. Garot, Green Bay; and A. Metz, Madison. The banquet closed with a song rendered by Al. Voelz and the national air rendered by the orchestra.

A popular rendezvous during the convention was Louis Sonntag's modern plumbing establishment in Sheboygan. Mr. Sonntag is a charter member of the association and he entertained the visitors in a manner that was greatly appreciated by his many friends. He was ably assisted in this task by his two sons, Joseph S., who is associated with his father in the business, and Louis Jr., who will soon be admitted into membership in the firm.

CONVENTION DATES.

Feb. 15, 1910.—Ninth annual convention of the Master Plumbers' Association of West Virginia, at Fairmont, W. Va. The sessions will be held at the Manley Hotel.

Feb. 15 and 16, 1910.—Nineteenth annual convention of the Ohio State Association of Master Plumbers, at Youngstown, Ohio. The sessions will be held at Knights of Columbus Hall, and headquarters will be established at the Tod House. President, J. L. Riley, 157 McDonough St., Dayton, Ohio; secretary-treasurer, Eb Ellen, 4714 Central Ave., S. E., Cleveland, Ohio.

Mar. 7 and 8, 1910.—Annual convention of the Kansas State Association of Master Plumbers, at Kansas City, Kans. Headquarters at the Grund Hotel. E. D. Draper, 730 Minn. Ave., Kansas City, Kans., secretary.

Mar. 8 and 9, 1910.—Annual convention of the New York State Association of Master Plumbers, in New York City.

Mar. 8 and 9, 1910.—Annual convention of Oklahoma State Association of Master Plumbers. The place not yet decided upon. The officers of the association are: President, Gus Hanson, Oklahoma City; vice-president, W. V. Roesch, Shawnee; secretary, D. W. Fitts, Oklahoma City; treasurer, Walter Newman, Shawnee, Okla.

Mar. 14, 15 and 16, 1910.—Annual convention of the National Association of Jobbers of Wrought Pipe and Fittings, at the Fort Pitt hotel, Pittsburgh, Pa.

PACIFIC COAST LETTER

After having devoted a great deal of time and attention during the past six months in getting ready for the proposed change in the present system of sub-contracting the Master Plumbers' Association of San Francisco, Inc., is now letting that matter shape its own course and the first of February is being eagerly awaited by many of the members of that organization for on that date the new rule, that no master plumber shall accept a sub-contract from a general contractor, will go into effect. Now that the sub-contracting business has been disposed of, as far as discussion and action in the regular meetings are concerned, renewed attention is being paid to the absorbing apprenticeship question and this promises to be taken care of within a short time in as satisfactory a manner as has been the sub-contracting question. During the meetings of the Association held during the past month this matter has been made the leading one for discussion and a definite plan for action has been outlined. The local Journeymen's Association has also been taking up this question at the recent meetings, and committees representing the two branches of the plumbing trade have met to discuss the question. Much has already been agreed to and while there are still propositions on which there are differences of opinion, it is felt that there is nothing of any great moment that cannot be arranged to the mutual satisfaction of both parties. The abnormal conditions that have been prevailing in the plumbing line since the fire are rapidly disappearing and a noticable change toward conservatism has been noted in the actions of the Journeymen now that the radical element of the trade has drifted on to new fields.

The new officers of the Master Plumbers' Association of San Francisco, Inc., have been installed and a marked change is to be noted in the list of directors for the new year. It has been found necessary to add to the old list of eleven directors and there are now fifteen. Those who are to serve in this capacity for the year 1910 are as follows: Frank J. Klimm, Joseph Ahlbach, Edmund Grundy, Alexander Coleman, James E. Britt, Albert L. Wilson, Fredk. W. Snook, Frank Lyman, William Buick, George F. Bernard, Winfried E. Burnham, Sibert Peterson, John Lettich, Michael Levy and George Guthrie. The officers are Frank J. Klimm, president; Joseph Ahlbach, vice-president; Edmund Grundy, treasurer; and Alexander Coleman, secretary. John L. E. Firmin is corresponding and recording secretary.

The California Association of Journeymen Plumbers have just closed its third annual convention at Monterey and elected the following officers to serve during the ensuing year: President, William Cahill, San Francisco; first vice-president, Martin Miller, San Jose; second vice-president, W. F. Brown, Sacramento; third vice-president, H. H. McManus; secretary, Walter Ford, Oakland. It was decided that next year's convention is to be held at San Rafael. Among the matters of importance discussed at this meeting was that of the proposition of a State Examining Board and the State registration of all plumbers. This matter was presented to the last State Legislature and passed both houses in the form of a bill, but was killed by the refusal of the Governor to sign it. The journeymen are strongly in favor of this bit of legislation and are preparing to make another attempt this year to have the proposition once again placed before the lawmakers. A system of registration similar to that now in force in San Francisco is favored.

In the person of Matt Harris, one of the new supervisors at San Francisco, the plumbing trade will have an avowed enemy and as chairman of the Health and Hospital Committee his influence will probably be felt at times. While discussing the proposition of advancing a small sum for the purpose of sending a representative to the convention of the American Society of Inspectors of Plumbing and Sanitary Engineers at Trenton, N. J., Mr. Harris became quite heated in his remarks. He said: "Just count me the other way on everything that tends to make any more trouble or expense in the plumbing way for any of our citizens. We've so many plumbers now and so many plumbing laws, that our people don't know where they are at. And I've had troubles of my own. I wanted a little wash basin hung on the wall at my place and I had a plumber put it in the other day. The basin was a cheap affair that you could buy for a dollar and a half. The man worked a little over four hours in putting it in. His bill was $18.50. That was all. And now you want me to vote for something that may mean more plumbers and plumbing regulations. Not much, I vote 'No!' No, sir, I don't vote to give $300 or 300 cents toward a gathering that means more trouble for home-builders. Get that bunch together and there's no telling what they may do. We have all the plumbing laws and regulations here in San Francisco that we can stand—and more too."

The William F. Wilson Co., San Francisco, will shortly commence work on the plumbing of a five-story apartment house building being erected on McAllister St., near Hyde, by Mary E. Harris. This work is to cost $4,000.

There is considerable plumbing work of a small nature now going on in the outlying districts of San Francisco, owing to the great amount of new sewer work that is now in progress. There is so much of this work being done at the present time that when the time came for awarding contracts for the construction of the Yerba Buena sewer there were no bidders, all of the prominent construction firms having all the work on hand that could be attended to.

Mayor McCarty has just taken office and according to his plans there will be a great amount of work done during the next two years on municipal buildings in San Francisco. It is proposed to erect at once a temporary city hall to house the various departments that at the present time are so badly scattered over the city. As soon as permission can be secured to do so it is intended that work shall commence on the erection of a new city hall on the site of the old one. The new mayor has appointed Master Plumber Frank J. Klimm a member of the Board of Health to succeed William F. Wilson, whose term of office is about to expire.

OBITUARY.

Eugene Arnstein, manufacturer of radiator bronzes, passed away at his home in Chicago on Monday evening, January 18th, in his 54th year. His wife, a son and two daughters survive him.

William Geurink, president of the Sanitary Co., Cleveland, O., died recently at his home, in that city, after a short illness of pneumonia. He was born in Westphalia, Germany, in 1848, and came to America in 1869. He was one of the founders of the Sanitary Co., makers of plumbers' brass goods.

Storrs Ely Emmons, a trusted employe in the service of the Plimpton & Hills Corporation, Hartford, Conn., lost his life recently by falling down through an elevator shaft in that company's factory. He was formerly a salesman for Eaton, Cole & Burnham Co., New York and Bridgeport, Conn. He was only 33 years old.

Among the Wholesalers

BOSTON PLUMBING SALESMEN PREPARE FOR ANNUAL DINNER.

The annual meeting and winter dinner of the Boston Plumbing Traveling Salesmen's association has been called for Saturday evening, February 5th, at the American House, Boston. Dinner will be servel at six o'clock and will be followed by a business session when officers will be elected, and an entertainment. With the memories of the good time last year still in mind the members of the association are expected to turn out in good numbers. The dinner is being arranged for by a committee composed of President Frank S. Eaton; vice-presidents, Joseph Maynard, Albert D. Cutler and Bernard J. Stokes, and Secretary Vernon J. Voye. They are carefully guarding the secret as to what the nature of the entertainment will be, but that the affair will be worth attending is assured.

ANNUAL MEETING OF THE CENTRAL BRASS MFG. CO.'S SALESMEN.

For the four days commencing Monday, December 20th, the managers and salesmen of the Central Brass Manufacturing Co., Cleveland, were in convention. The entire "Bibcock family" was present, including Michael W. Heller, Emile L. Strauss, John N. Mortimer, Samuel Z. Brown, Robert Moses, Manuel C. Barkin, Moses J. Hirschfield, Walter G. Hamilton, Leon Bloch, Joseph Mayer, Herman Miller, Henry Bloch, Joseph Kuran, Walter L. Heady, Leon Feder, Theodore H. Mandelkorn, F. R. Fuller, H. D. Smith and W. H. Tripp. Every minute of the time was filled with enthusiastic business sessions and a little pleasure mixed in. At the meeting trade conditions were reviewed and an outline was made of the extensive plans for the prosecution of next year's campaign for business. Every item in the company's line of goods was carefully studied, both from the factory and sales-point of view, with the object of producing the very best goods that can be obtained by the combination of experience, knowledge, skill and good materials. The salesmen made a trip through the factory to inspect the extensions and improvements made during the past year and to see again what a high-grade shop really means. On Wednesday evening, December 22nd, a banquet was spread at the Excelsior Club, at which each man had an opportunity to tell what he expects to do during the coming year to increase the business from his territory. A more enjoyable and enthusiastic banquet could scarcely be imagined. Every one present was enthusiastic for the future of the Central Brass Manufacturing Co., and especially for its patented product, the Quick-pression work. Extensive plans for advertising this line of goods to consumers for the benefit of the master plumber had been outlined and described during the business session preceding the banquet. With the force of this advertising added to the work of the salesmen and the quality of Quick-pression work, the line will become better known than before to the plumbing trade.

ANNUAL MEETING OF MUELLER'S "FORTY-NINE CLUB."

The salesmen of the H. Mueller Manufacturing Co., Decatur, Ill., are again on the road, after two weeks spent with the firm at the home office in that city. During that time the annual school of instruction was held, the sessions being presided over by Adolph Mueller, president of the company, all the members of the firm and all its salesmen being present. There were sessions each morning and afternoon and toward the close of the two weeks' session several night meetings were held in order to dispose of all the business matters that came up.

A number of addresses were delivered during the sessions, but the major portion of the time was devoted to practical business questions, outlining a plan of action and instructing the new salesmen. The road sales-force has been augmented by the addition of a number of new men, while several of the old men have retired. In the main, however, the personnel is the same as it has been during the past few years.

An interesting and beneficial feature of the meeting was the exhibition and demonstration by the factory experts of new goods, which the Mueller Company is constantly adding to its line.

The social features of the gathering included a dinner at the handsome home of the Decatur Country Club, which was placed at the disposal of the company and their salesmen for the evening. The program consisted of a dinner, speeches and then bowling, billiards, etc. A number of prominent Decatur citizens participated with the salesmen in the pleasure of the occasion.

Another important affair was the initiation of the new salesmen into fellowship of the "49 Club," an organization which takes its name from the No. 49 stop and waste cock made by the firm. This occasion was preceded by a feast, and then the degree team took the candidates in hand, and tried them out. T. F. Leary, as president of the club, presided and directed the exercises. The following are the officers of the club: President, T. F. Leary; secretary-treasurer, J. H. McCormick. The salesmen who will represent the company on the road are: E. B. Cameron, W. N. Dill, W. B. Ford, W. C. Heinrichs, T. F. Leary, F. B. Mueller, J. H. McCormick, M. F. Kirkwood, D. E. Rowley, James Smith, M. T. Whitney, M. G. Wasson, F. L. Hays, C. H. Brown, E. S. Morrow, M. Saunders, R. Williams, E. S. Stebbins, C. T. Ford, A. C. Pilcher, R. M. Hastings, G. A. Caldwell, E. W. Aubinger, W. F. Henessy, W. T. McCarthy, N. E. Sippell, Wm. N. Campbell, H. F. Clark.

ACCEPTS POSITION WITH CAMERON SCHROTH CAMERON CO.

Chas. E. Dickinson, who is well known to the heating and plumbing tharde throughout Illinois, Iowa and southern Wisconsin, as well as the Chicago trade, has become associated with the Cameron Schroth Cameron Co., Chicago, and after February 1st will have charge of a special department with them. Mr. Dickinson has for

Chas. E. Dickinson, New Representative of Cameron, Schroth, Cameron Co., Chicago.

the past two years represented the Holland Radiator Co. in southern Wisconsin, northern Illinois and eastern Iowa and in his new work will continue to visit his old friends in that territory. Mr. Dickinson, who has made his home in Iowa, will now reside in Chicago. Mr. Dickinson's friends will be interested to know that he recently was married to Miss Mary Ahrens, daughter of G. T. Ahrens, president of the Ideal Htg. & Const. Co., Davenport, Ia.

The State Association of Master Plumbers of Oklahoma will hold its annual convention on March 8th and 9th, according to a message just received from Secretary D. W. Fitts, Oklahoma City, Okla.

The Metal Market

PIG IRON.

Considerable inquiry is manifest in the pig iron market and there is probably more tonnage being figured on than at any time since last October. No special branch of the trade is responsible for this, it appearing to come from all classes of consumers. The General Electric Company has purchased about 10,000 tons of foundry iron and several Philadelphia foundry interests have purchased small lots which aggregate 30,000 tons. In addition to the purchases already made by the electric manufacturers it is reported that this company is in the market for about 50,000 tons, including malleable. Low grade iron has been in relatively better demand than the higher grades, but some of the New York sales-agents report that they have little available for shipment before April. Furnace interests adjacent to Chicago are protesting against the new freight tariff effective February 1.

In the Birmingham district there are persistent rumors that Southern No. 2 is sold at less than $14, but it is difficult to trace these authentically and it is certain that for the ordinary tonnages $14 is bottom. Some resale iron may be had at concessions of 25c, but this is doubtful in view of the fact that the larger interest are asking an advance of 25c to 50c per ton for second half delivery. Prices are without material changes and we quote for delivery within the harbor, New York, as follows:

Northern Foundry No. 1	$18.75 to $19.25
Northern Foundry No. 2	18.50 to 19.00
Plain Foundry No. 2	18.00 to 18.50
Virginia Foundry No. 1	19.25 to 19.75
Virginia Foundry No. 2	18.75 to 19.25
Southern Foundry No. 1	18.75 to 19.25
Southern Foundry No. 2	18.25 to 18.75

PIG TIN.

There was only one good day's business during the week and that was last Tuesday, when fully 600 tons were sold, but even at this most of it went to dealers and consumers did not take over 150 tons. Prices continued to sag until that day when sales were made at 32.30c for 5 ton lots. Some sales during the week have been made at 32.20c and between these two figures is about the general average for 5 ton lots. Small lots are held approximately at 35c. Arrivals so far this month aggregate 3,500 tons and there is as much afloat for American ports, of which at least 1,700 tons will make this month's delivery.

IN THE OLD IRON MARKET.

The embargo has been lifted at one important Eastern mill and the heavy storm has interfered with the collection of scrap so there is a fair chance that the market will improve. Price changes are unimportant and the prices are quoted as follows, per gross ton:

No. 1 R. R. wrought	$16.50 to $17.00
Heavy cast	15.00 15.50
Heavy melting steel	14.75 15.50
Wrought pipe	13.25 13.75
Cast borings	9.75 10.25
Wrought turnings	11.25 11.75

IRON TRADE DEVELOPS ON BROAD LINES.

Those who expected that by this time pig iron prices would be breaking all records are disappointed, but those who hoped to see the iron trade slowly and steadily develop along broad lines have had their hopes fulfilled, according to Matthew Addy & Co.'s weekly letter. The manner of the revival of the iron trade promises a long continuance of good and profitable business. Manufacturers have in a measure felt their way and have largely waited for a demand instead of anticipating it. This means that the whole trade is on the foundation of actual business and shops and foundries are not running on the vague and uncertain hope that the future may atone for the deficiencies of the past and the present. During the week there has been no letup in the buying of pig iron. The purchasing movement is not sensational, but it is regular and of large aggregate volume. The striking thing about the buying is that it is for shipment as far ahead as possible. A great deal of the iron just sold has been for delivery over the entire last half of the year. So there is no question of the confidence the melters of iron have in regard to their trade for 1910. Without any doubt whatever this is going to be a year when all records for the production and consumption of iron will be broken. As a matter of fact for two years the country has been wearing out the iron and steel actually in use faster than the wear and tear has been replaced, and all this has to be made up. In addition the natural expansion of the country and its increased needs mean an inevitable larger demand for pig iron. Prices are firm but unchanged. Coke is much delayed in its movements by reason of the railroad congestion and the coke ovens have been much handicapped by the severity of the weather.

COPPER.

The market is undoubtedly easier than last week and sales of electrolytic have been made at 13.75c. Even lower figures are reported but unconfirmed. It is easy to believe, however, that if a desirable tonnage were offered 13.62½c would be accepted. Lake is also lower at 14c, although sales were made last week at 14.12½c. There appears to be no special reason for the decline except there is more copper in the market than there are buyers for it and in Europe, too, the demand is lessening. One of the great troubles is that the southwestern producers are putting out more copper than anybody believed it was possible and consequently new markets will have to be developed. Whether this can be done during the present year or not remains to be seen, but it would appear if the wire trade should pick up that there would be quite a decided betterment in price. The export movement continues large and although it will be less than last month still about 16,500 tons have already been shipped. The London market is a little easier than a week ago, closing at £60 7s. 6d. for spot and £61 5s. for futures.

NEW YORK METAL MARKET, JANUARY 25.

Copper, Prime Lake	$13.95
Copper, Electrolytic	13.62½
Lead	4.75
Spelter	6.25
Antimony, Cooksons	8.50
Straits Tin	32.37½

CHICAGO IRON MARKET, JANUARY 26.

Lake Superior Charcoal	$19.50-$20.00
Southern, No. 2 Foundry	18.35- 18.85
Northern, No. 2 Foundry	19.00- 19.50

January 25, 1910.

Foundry iron was the same as the week previous.
$1 more a ton than year previous.
Copper was ¼ cent more a lb. than month previous.
½ cent less than the year previous.

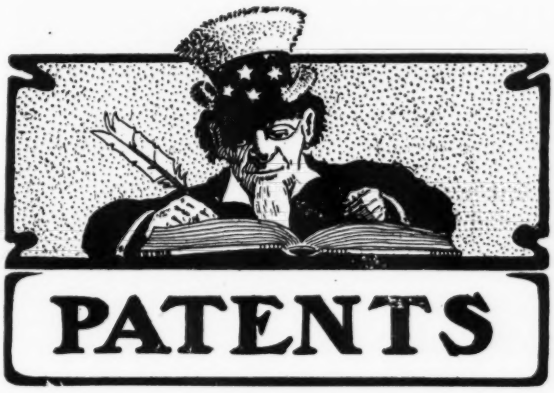
NEW YORK OLD METAL MARKET.

Dealers' buying prices are as follows:

Heavy crucibled copper	$12.37½ to	$12.62½
Light copper	11.00	11.12½
Plumbers' cocks and faucets	9.75	10.00
Heavy lead	4.25	4.40
Tea lead	4.05	4.15
Solder joints	7.50	8.00
Block tin pipe	31.00	32.00

ANNUAL BALL OF MASTER PLUMBERS' PLEASURE CLUB A SUCCESS.

The North and West Side Master Plumbers' Pleasure Club held its annual ball on Wednesday evening, January 19th, at the Northwest hall, on West North Ave., Chicago. The event was favored with pleasant winter weather, making the attendance very large, as usual, and an exceedingly enjoyable time was had by every one who particpated in the affair.



946,580, Lubricator—John B. Purvis and James G. Purvis, Detroit, Mich.

946,684, Back-pressure valve—Charles C. Neighbors, San Antonio, Tex.

946,691, Radiator-top—Harold W. Baerresen and Edgar C. Schmidt, Denver, Colo., assignors to Colorado Manufacuring and Construction Company, a corporation of Colorado.

946,836, Hot-water heater—Warren H. Bright, Minneapolis, Minn. Of the five claims made for this invention the most interesting reads as follows: "The combination with a water tank, of a boiler located below the same, a tube extending from said boiler upward into said tank, and provided with a longitudinally extended partition, dividing said tube into hot and cold water conduits, having communication at their upper extremities, said hot water compartment having an inlet opening thereinto from the upper portion of said boiler, and said cold water conduit having a port opening thereinto from the lower portion of said tank."

946,851, Urinal—William J. J. Bowman, Trenton, N. J. Two claims are made for this invention the first one reading as follows: "An article of the class described, having a vertically recessed or hollow body portion, the said hollow body portion merging into an inclined depression at the bottom thereof, a base portion projecting above the recessed bottom portion, a drain located in said recessed body portion below the level of the projection of the base, and a continuous bead extending along the side edges of the body portion and along the inner edge of the base, below the upper face portion of said base."

946,861, Water-closet—Patrick J. O'Brien, Boston, Mass., assignor to James Barrett Manufacturing Company, a Corporation of Massachusetts. Two claims are made for this invention, one of which reads as follows: "In a water-closet, in combination, a trap provided with a flange having an upwardly extending edge forming a seat, a hopper provided near its lower end with circumferentially extending recesses and supported in said seat, securing members entering said recesses and provided with projecting lugs, abutments between said members for preventing the hopper from turning with respect to the trap, and means co-operating with said flange and said lugs for securing said hopper to said trap."

946,889, Heating, cooling, and ventilating system—Jules C. Veil, New York, N. Y.

946,894, Backwater-trap—William C. Burns, Upper Sandusky, Ohio. The most important claim made for this invention reads as follows: "In a device of the character described, a receptacle having a sewer connection at its lower end, a tube connected with and extending upwardly from the lid of said receptacle, a float with the receptacle having a stem extending upwardly through the tube, an inlet near the upper end of the receptacle comprising a pipe extending through and rotatable in a stuffing box, said pipe being provided with an elbow at its outer end, a suitably guided flexible member connected at one end with the elbow and having a counterweight at its opposite end, a notched trigger, a stop member upon the flexible element engaging the notched trigger, a trip-lever having a lug extending in the path of the trigger, an extension member slidably connected with the trip-lever and pivotally connected with the stem of the float, and means for limiting the movement of the float."

946,970, Steam, air and water trap valve—Fred W. Leuthesser, Chicago, Ill.

946,990, Ground-joint connection—Frederick E. Swope, Jr., Philadelphia, Pa.

947,040, Humidifier—James Kelly, Providence, R. I.

947,042, Gas-valve—Abel S. Lindkwist, Springdale, Pa.

947,081, Pipe-wrench—John R. Morris, Marshalltown, Iowa.

947,082, Urinal—Elmer E. Palmer, Syracuse, N. Y.

947,172, Gage-cock—Lambert J. Bordo, Philadelphia, Pa.

947,183, Flushing-valve—Samuel W. Lewis, New York, N. Y.

947,184, Hydrant—Henry W. Lunceford, Los Angeles, Cal., assignor of one-half to Western Pipe and Steel Co., Los Angeles, Cal., a corporation of California.

947,187, Automatic relief-valve—Ernest A. Ploeger and John Penrose, Chicago, Ill.

947,189, Vacuum and flushing apparatus—David Rodreick, San Diego, Cal., assignor to James Mason, San Diego, Cal.

947,207, Closet-fitting—William M. Weatherly, Greensboro, N. C.

945,740, Apparatus for Gas Analysis.—Kent W. Bartlett and Judson J. Staley, Madison, Wis., assignors to Northern Water Softener Company, Madison, Wis., a corporation of Maine.

945,753, Closure for Hose-Pipe Connections.—Glenn R. Chamberlain, Albert G. Schroeder and Archibald A. McLeod, Grand Rapids, Mich.; said McLeod assignor to said Chamberlain and Schroeder.

945,763, Combined Faucet and Strainer.—Reuben B. Disbrow, Owatonna, Minn.

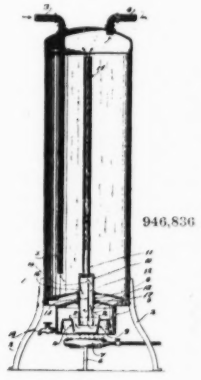
945,817, Exhaust-Head.—Adolph Sorge, Jr., St. Joseph, Mich.

945,831, Automatic Draft-Regulator for Furnaces.—Herman F. Westphal, Milwaukee, Wis.

945,873, Oil-Burner.—Harry B. Stilz, Bath, Me.

945,922, Oil-Burner.—Holmes Duke, Beaumont, Tex.

945,943, Door for Boiler-Furnaces.—Melville C. Haw-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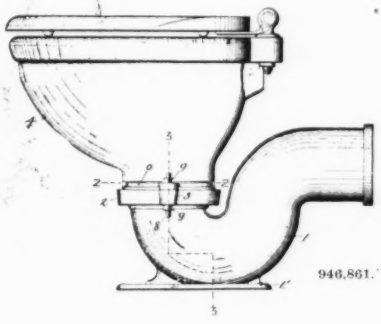
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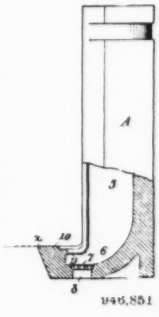
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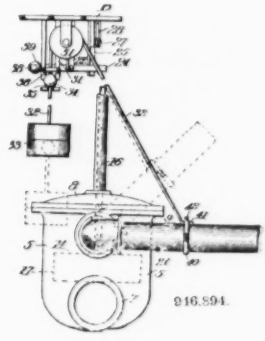

946,894.

ley, St. Louis, Mo., assignor to John H. Kinealy, St. Louis, Mo.

945,977, Boiler Circulating Device.—Frank H. Newhall, Juneau, Alaska.

946,405, Draft-Equalizer.—Franklin M Smiley, Goshen, Ind.

946,484, Grease Lubricator.—Herbert S. Blynt, Loudonville, Ohio, assignor to The Ohio Grease Lubricant Company, Loudonville, Ohio, a Corporation of Ohio.

946,488, Furnace-Grate.—Henry C. Chamberlin, Olyphant, Pa.

946,506, Pipe-Tongs.—James A. Gillespie and Marvin J. Corey, Coalinga, Cal.

946,525, Steam-Boiler Furnace.—Thomas Seevers, Oskaloosa, Iowa.

With the Makers

PRESSED STEEL RADIATORS.

The utilization of iron and steel materials in the manufacture of stamped products, has made marked progress in recent years, and one of the latest adaptations of rolled steel is that of the stamping of pressed metal radiators from sheets for steam and hot-water heating. The plant of the Pressed Radiator Co. of America, manufacturer of Kinnear pressed radiators of different models, and located at West Pittsburg, Pa., represents modern and advanced ideas in this line of production. The works cover approximately two and one-half acres, the buildings are substantially constructed of steel and concrete, and the site is well served by railroad sidings connected with different trunk lines. The equipment of the plant consists of up-to-date machinery, all presses being automatic and operated by electricity. The machinery is arranged in such a manner that the sheets are unloaded at one end of the works, are then conveyed to the different sized shears and cut into the section of radiator required. They are then sent through the different stamping operations and finally reach the end of the works crated and in condition for shipment. Pressed radiators are made from dephosphorized and decarbonized sheets Nos. 20 to 18 gage, which are especially rolled to consumers' specifications. Careful inspection of the sheets is made so that any undesirable properties may be eliminated, and claims are made as to the non-corrosive nature of the metal. The joints and connections of the different forms of radiators are constructed with the double interlocking seam as shown in Figs. 1 and 2, and are machine made. They are formed with dies and machinery especially designed for the purpose. When locked and seamed together, it is said to be impossible to force them apart except under unusual and excessive pressure. Each radiator after being assembled is tested by a hydrostatic pressure of 35 pounds to the square inch. In weight they are extremely light, weighing approximately two pounds to the square foot, and the fact that they may be readily handled is used by manufacturers as an argument in their favor. On the question of durability, it is claimed that the uniform and selected material used, together with the added protection of its being thoroughly galvanized inside and out, make the enduring qualities a matter of many years.

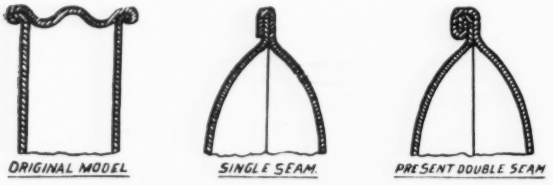


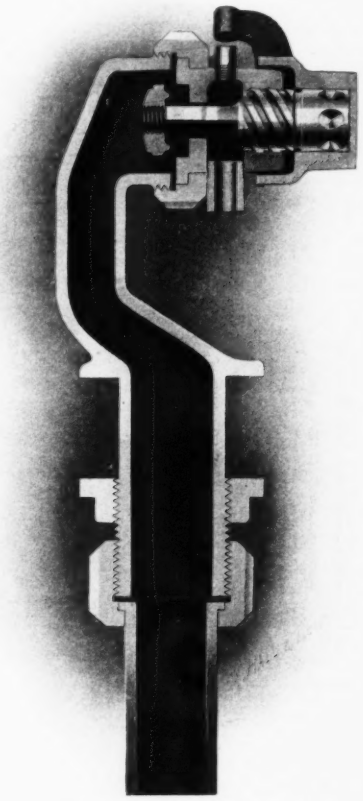
Fig. 1. Evolution of Pressed Radiators Illustrated by Sections of Three Models.

Fig. 2. Cross-Section of Two-Column Pressed Radiator.

THE "GACO" BALL-COCK.

The Pittsburgh Gage & Supply Co., Pittsburgh, Pa., manufacturer of the "Gaco" ball-cock, shown herewith, has made, what it considers, a notable departure in the marketing of ball cocks. To show its confidence in its product it is selling its ball-cocks with a two years' garantee against leakage, whistling, or hammering with the understanding that if it fails during that period the manufacturer will not only replace the ball-cocks but will allow the plumber his labor in making the change. The manufacturer claims he is able to make this unique garantee owing to the principle upon which the ball-cock is made.

The method of operation in this ball-cock is by means of a screw with a peculiar angle that permits the water pressure doing the closing, or, in other words, when the weight of the float is taken off the stem the water pressure will close the valve.



The "Gaco" Ball-Cock.

The advantages claimed for the screw is that the bearing surfaces on the thread prevent any chattering or hammering and further give exceedingly strong leverage for opening against the water pressure so that it is not required to use any special weight-float but rather the ball-cock work under all pressures with the standard floats.

The above garantee should be of exceedingly great interest to plumbers as it permits them to offer their trade a ball-cock which they can back with an unqualified garantee with the assurance that the manufacturer will stand behind them.

The manufacturer states that this ball-cock has been tested out for a period of about two years before marketing and he has yet to find a defect or objectionable feature.